A Lecture
ON
THE OPERATIVE TREATMENT OF INOPERABLE CANCER.

DELIVERED AT THE CANCER HOSPITAL, BROMPTON,

BY

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THE treatment of inoperable cancer is too vast a subject to permit me even to touch upon many aspects of the question. For example, I have no time to refer to any of those innumerable methods suggested for the cure of cancer that we have submitted to us at this hospital nearly every day. Those of you who are interested in the "cancer enthusiast" will find on this table, in the shape of pamphlets, books, letters, etc., unmistakable evidence of the energy and abandon with which the search for a cancer cure is prosecuted. In each of them is claimed the relief or cure of cancer, whatever its nature or position, whether operable or inoperable.

What is inoperable cancer? What does the word "inoperable" signify? It is generally applied to those cases in which the growth is so large or so fixed, or in which metastases are so widespread that no operation that is compatible with life offers any promise at all of eradicating the disease.

It follows that the application of the terms "operable" or "inoperable" must be largely dependent upon the personal equation of the surgeon—and he is often wrong; indeed, roughly speaking, he is wrong in about 50 per cent. of his cases. For that, taking all types of cancer, is about the proportion in which recurrence takes place after a radical operation has been performed.

Conversely, a case condemned as inoperable by one surgeon may be operated upon with complete success by another who is more enterprising or more lucky.

However, I am not now concerned with cases about the operability of which there can be any difference of opinion. Only too often one meets with cases where there can be no question of the possibility of carrying out any operation of a radical nature.

We have at our disposal two methods of treating cancer when it has reached this stage: first, by the application of one or several of those experimental cures for cancer to which I have already alluded. But we should be neglecting our patients did we not at the same time undertake one or other of the well-recognized palliative methods of treatment which are directed to the relief of symptoms rather than to the actual cure of the disease. These methods are, of course, very numerous, and include such procedures as the administration of drugs or the destruction of nerves to control pain, the use of belladonna to diminish mucous discharge, the application of x rays, radium, or diathermy to control ulceration, and so on. But what I want specially to draw your attention to to-day is the operative treatment of inoperable cancer, which perhaps sounds paradoxical. But there is no paradox, for it is our application of the word "inoperable" that is unfortunate when what we really mean is "incurable." It is a pity that the word has ever been permitted to be used in its usual application, for it inclines us to take it too literally and say, "I am afraid the case is inoperable—I can do nothing," and this in spite of the fact that such measures as gastrostomy, gastro-enterostomy, cystostomy, and so on, are perfectly familiar to all of us as palliative operations frequently carried out in so-called inoperable cancer. But these operations are life-saving measures performed merely for the purpose of dealing with one or more of the effects of cancer. They do not encroach upon, indeed they do not influence the disease itself. The kind of operation for which I want to plead is one deliberately undertaken with the sole object of removing the growth itself or as much of it as possible, in the hope of relieving much of the patient's discomfort, but with no expectation at all of permanently curing the disease. I believe that we are not active enough in the treatment of inoperable cancer, and I am convinced that such operations have a far wider application than is generally accorded to them.

Cancer of the Tongue.

Ordinarily speaking, the life-history of a case of cancer of the tongue resolves itself into the history of the tongue itself—a history of ever-increasing pain and discomfort. So long as the growth is confined to the intrinsic muscles the discomfort is not great. There is some pain, a little difficulty with speech, some salivation; but so soon as the extrinsic muscles become involved—and in the majority of cases this is only a matter of weeks—the real suffering begins. Speech is more difficult, salivation is more profuse, and pain is aggravated by each attempt at speech or mastication or even swallowing. There is by this time a horribly offensive ulcer which is impossible to keep clean; and finally, worn out by pain and loss of sleep, and exhausted by septic poisoning, the patient falls an easy victim to bronchopneumonia, gangrene of the lung, or some similar affection. That is to say, some condition directly resulting from the offensive condition of the mouth.

Of 182 cases in which I ascertained the cause of death, in no less than 128 it was one of the above conditions. This teaches us, I think, that in cancer of the tongue, when not operated upon, most of the suffering and death itself are directly attributable to the local condition and to its septic concomitants.

Cancer of the Breast.

Dependent upon the position and nature of the growth and the size and shape of the breast, cases not operated upon ultimately reach a stage in which ulceration of the growth occurs, and the patient suffers first from the mechanical discomfort of the mass, and secondly is troubled by a copious discharge, usually most offensive. Finally, haemorrhage and septic absorption complete the picture and terminate life, death resulting in large part from septic processes.

Cancer of the Uterus.

In cancer of the uterus we have the same story—sloughing and disintegration of the growth, with haemorrhage, discharge, and septic absorption as the chief symptoms—symptoms almost entirely referable to secondary changes in the growth. And in a large percentage of the cases septic peritonitis, pelvic abscess, or ascending suppurative nephritis are the cause of death, rather than any considerable extension of the primary growth or multiplication of secondary deposits.

Duration of Life.

I need not multiply examples of types of cancer in which much of the suffering and many of the deaths largely or in part result from septic processes arising from the primary growth, but would compare with these such cases as periosteal sarcoma of bone, where ulceration is rare and the patients die of secondary growth. Or cases of carcinoma of the liver, where, although wasting may be extreme, the patient never gets into the dreadful condition found in uterine cancer, for example; because here there is no sloughing, and therefore none of the awful fetor and sepsis that accompany it.

In the former cases the patients have suffered and have died from sepsis and its concomitants rather than from cancer, and I am convinced that this is wrong and a reproach to modern surgery. Surely with all the methods now at our disposal such clinical histories and such deaths should not be possible. Few patients should be permitted to die of the primary growth alone; the number of secondary deposits ought to be in direct proportion to the excellence of our treatment, as they certainly are to the duration of the disease. I collected some figures which are of interest in this connexion; they are rough averages, but they serve to illustrate my point.

The average life of cases of cancer of the tongue, from first to last, when no surgical treatment is attempted, is fourteen months; the number of these cases in which metastases are found in internal organs is only 6 per cent.

The average total duration of cancer of the cervix uteri is twenty-one months. The percentage of secondary deposits in distant glands or internal organs is 15 to 20 per cent.

The total duration of cancer of the lip is twenty-four months, and the percentage of deposits in the lungs and elsewhere rises to 25 per cent.

While in cancer of the breast, with a total average life of three and a half years, the number of deposits is no less than 50 to 60 per cent.

It is very clear that with the increase in the average duration of life there is a corresponding rise in the number and complexity of the metastases; and this, I think, shows that a patient suffering from incurable cancer who dies with no secondary deposits, dies too soon by several months. I believe that life should and can be prolonged in many cases by palliative operations on the primary growth.

Cases are too few to enable me to give statistical results of palliative operations, but it is fair to draw deductions from cases in which ordinary operations have been carried out for disease which has recurred and ultimately killed the patient—that is to say, cases which, strictly speaking, were inoperable at the time of operation.

In cancer of the tongue, as already mentioned, the average life was fourteen months in cases not operated upon. In cases in which operation had been carried out, but where recurrence had killed the patient, it was seventeen months. A small gain, it may be said. But a far greater gain than is at first sight apparent, for no less than 44 per cent. of these cases remained absolutely free from any sign of recurrence within the mouth. Think what this means. Not only was life prolonged three months, but what a difference in that life—on the one hand, the intolerable misery of primary cancer within the mouth; on the other, the comparative comfort of secondary cancer in the glands or elsewhere.

In the case of the breast a much greater difference is found: Non-operated fatal cases, three and a half years; operated fatal cases, six years.

But mere prolongation of life is not my plea; it is increased comfort, or rather some diminution of the dreadful misery of inoperable cancer, that should be aimed at; and there are many types of cancer in addition to those already referred to that lend themselves to palliative operation. I may mention the excision of a large and painful sarcomatous testicle, even in face of irremovable abdominal metastases; the amputation of a limb rendered useless and unwieldy by inoperable periosteal sarcoma; the excision of a portion or the whole of the stomach in spite of the presence of infiltrated portal glands; the removal of the upper extremity when affected with the "brawny oedema" of breast cancer, or the performance of ovariotomy for cancer of the ovary even when wide abdominal metastasis indicates not far distant death.

Objections to Palliative Operations.

One of the criticisms levelled against these operations undertaken in cases in which death from the condition for which we operate must finally be inevitable, is the rather selfish one—that they are likely to lower the prestige of the art of surgery and of the surgeon who undertakes them.

This argument loses much of its force when it is remembered that the opinion of the general public as regards the surgical treatment of cancer could scarcely be less favourable. There is hardly a layman of my acquaintance who does not or who did not believe that "cancer always comes back after operation."

Even the most intelligent members of the general public will not realize that, generally speaking, it is only the unsuccessful cases that they hear about. Patients do not reveal the fact that they are suffering from or have been operated upon for cancer until concealment is no longer possible, with the result that the public hear little or nothing of the considerable proportion of cases—a proportion daily increasing and probably not less than 40 to 50 per cent.—in which early operation is followed by apparent cure. For this lack of knowledge—for which we ourselves are no doubt in part to blame—the public have to suffer. When they realize that every chronic ulcer and every painless swelling arising anywhere in the body of a person over the age of 35 years is much more likely to be cancer than anything else, and when they realize that in early and complete operation lies their only chance of cure, then the operative surgery of malignant disease will be able to show far better results than a proportion of 40 per cent. of cures.

Another matter for consideration is the surgeon himself. No surgeon cares to be associated with unsuccessful cases, but, none the less, we all have to be. But these cases are not unsuccessful. We set out to do a certain thing, after explaining its exact objects and limitations to the patient or the patient's friends, and we do it. We offer relief from the most distressing of the symptoms during the last remaining months of life, and we obtain it. This is success, not failure; and it is rare, indeed, that the patient is not grateful for what has been done.

What other arguments are adduced against these incomplete operations? What are their disadvantages?

It has long been held—every textbook teaches—that incomplete operations are dangerous and should never be performed; yet, in dealing with so-called operable cases, we pay no attention to this belief, although we know full well that a large percentage of our cases will recur locally. That is to say, our operations will turn out to have been incomplete.

It is true that operation occasionally seems to cause widespread diffusion of cancer, possibly from mechanical interference with the tissues, just as generalized infection is sometimes met with after operations for surgical tuberculosis. But there is no clear evidence that this rapid diffusion of growth is more frequent after operation in so-called inoperable cases than it is after operation in the early cases, and I therefore think that it is not a matter of importance. It is also said that local recurrence takes place quickly after these partial operations, and that the last state of the patient is worse than if nothing had been done at all. Local recurrence takes place in a certain proportion of cases after any kind of operation; but even in these cases, when recurrence takes place comparatively early, I do not believe that the condition of the patient is as bad as it would have been by that time, supposing no operation had taken place at all; and no one can deny that in many cases local recurrence never takes place at all—the patient dying a merciful death from visceral deposits after several or even many months of comparative comfort.

Advantages of Palliative Operations.

The advantages to be gained by these procedures can best be illustrated by showing you some cases in which they have been carried out.

CASE I.

When I first saw this patient there was a large ulcerated growth in the lower and inner quadrant of the breast, and extensive involvement of the axillary glands. The growth, which is well shown in the photograph (see p. 779), was fixed to the sternum, and the case was obviously one in which radical operation could not be attempted, particularly as Dr. Knox was able to demonstrate the presence of a mass of secondary growth within the mediastinum. The patient was quite unable to carry out her duties, and I accordingly performed a limited operation six weeks ago. The patient looks and feels comparatively well, and she is, of course, very pleased with the result. Even should local recurrence take place to-morrow, I believe she would still think that the comfort of the last few weeks had been well worth the pain and discomfort of the operation. The advantages gained in this case, which may be taken as a type, are obvious. The patient is freed from the mechanical discomforts occasioned by the mere mass of the growth; she is relieved of the necessity of constantly dressing the ulcerated surface; she is free from offensive odour; she is no longer being poisoned by septic absorption; and, for a little while at any rate, she will be able to continue her occupation as a machinist. In this case we demonstrated a deposit in the mediastinum, probably arising in the mediastinal glands. Such deposits extend rather slowly, I believe, and therefore, although the duration of this patient's life is very definitely limited, yet I think that she has several months to live, and it seems possible that during those months she will have no local recurrence.

CASE II.

The next patient came to me over two and a half years ago from another hospital where an operation was thought to be inadvisable owing to the extent of the disease. There was a very large tumour which had broken down on the surface, and was adherent to the pectoral muscle and to the ribs. The ulcerated mass completely prevented the patient from following her occupation as a monthly nurse, and I accordingly operated upon her. The wound quickly healed, and she returned to her work, which she has done ever since without much difficulty. Five months ago I found evidence of recurrence in the ribs and sternum; but the skin is still intact, although

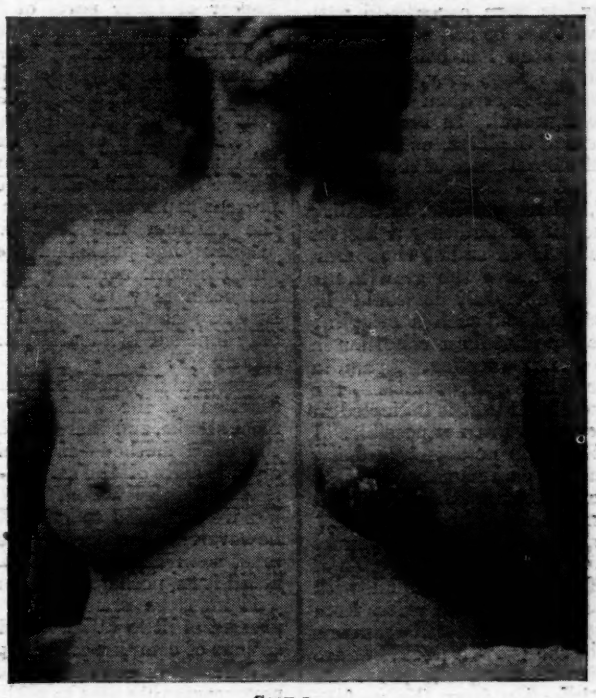
there is a considerable mass in the chest wall. This patient has had two years at least of complete relief, and considering the condition she was in before I operated upon her, I think the result is highly satisfactory.

CASE III.

This patient was admitted to the hospital last May with a pelvic tumour, and much free fluid in the abdomen, which was much distended. When I opened the peritoneum several quarts of slightly blood-stained fluid escaped, and I found a solid malignant tumour of each ovary with numerous secondary nodules scattered throughout the peritoneum, including one the size of a fist in the mesocolon. In spite of these secondary deposits I determined to relieve the woman of the two large ovarian masses. She made a good recovery, and even now—nine months afterwards—she gets about quite well, whereas she was previously completely incapacitated. There is no actual evidence of any recurrence of the ascites, but the patient states that she thinks her abdomen has been getting a little bigger lately.

CASE IV.

The next patient was admitted to the hospital for a recurrence in the axilla, following upon amputation of the breast many years ago. The arm was in the condition of brawny oedema, and the poor woman suffered such acute pain that my colleague Mr. Swan performed interscapulo-thoracic amputation—removal of the limb with the scapula and the outer half of the clavicle. She is now quite free from pain and very grateful for the relief that she has obtained, although she bitterly complains that she can still feel the fingers of the amputated limb. It is not often that cases present themselves in which this operation is feasible, but when they do I think there should be no hesitation in performing it, for although the mutilation is great, the relief conferred is worth it.



CASE I.

CASE V.

(Mr. Rowntree next showed a specimen of sarcoma of the uterus, in which he had performed a very incomplete operation with considerable benefit.) The patient was admitted under the care of Mr. Ryall with intestinal obstruction and a large fixed pelvic tumour. In Mr. Ryall's absence I opened the abdomen and found a huge malignant growth of the body of the uterus, which had become cystic and was suppurating. The mass was adherent to and was obstructing the pelvic colon, and during manipulation the suppurating cavity burst and free bleeding took place. There seemed to be nothing to do but to attempt to remove the tumour as far as possible, and this I did, but had to leave large masses of growth which were infiltrating the pelvic cellular tissues. The patient was very ill for two or three weeks, but ultimately left the hospital soundly healed, with the prospect of some weeks at least of comparative comfort. I have not been able to ascertain the ultimate fate of this patient.

The tumour is very interesting, for it proved to be a small spindle-cell sarcoma. A good deal of it has been cut away in order to display the curious lobulated arrangement of the growth within the uterine cavity. Slender outrunners of the tumour have penetrated the large veins in the manner so typical of this form of sarcoma.

Palliative Operations on Secondary Deposits.

It does not always happen that it is the primary growth that causes the most suffering, and very occasionally the removal of secondary deposits gives much relief although the primary growth cannot be interfered with.

Last summer a patient was admitted to the chronic wards, under the care of Mr. W. Ernest Miles, with a diagnosis of inoperable abdominal carcinoma. It was found that there was a large pelvic tumour with much free fluid. As Mr. Miles was away, I opened the abdomen, and discovered a large solid tumour springing from each ovary. I recognized that they were probably of metastatic origin, and, after removing them, explored the abdomen for the primary growth. Rather to my surprise—for there had been no gastric symptoms—I found a large mass involving the greater curvature of the stomach, and so extensive as to be quite irremovable.

The patient made a good recovery and left the hospital very much relieved, to die three months later of the stomach condition.

Selection of Cases for Palliative Operations.

It must not be supposed from what has gone before that such operations as I have described are to be recommended in each and every case, irrespective of the extent and nature of the disease. Far from it; for each case requires most careful consideration in the light of a full knowledge of the natural history of the particular type of cancer concerned.

Such knowledge is not at present to be got from text-books. It is only to be obtained, I believe, by constant observation of the disease in all its stages in some institution such as this, and by constant attendance in the *post-mortem* room. Experience so gained is of the greatest possible value when attempting to form an estimate of the probable routes of extension of the disease, and of the probable duration of life.

Mr. Rowntree showed a patient with two large cutaneous masses in the axilla following upon amputation of both breasts some two years ago. It might be thought that such a condition was suitable for a palliative operation, but experience proved that deposits of this particular kind grew very slowly, and took a long time to break down. Moreover, when ulceration occurred it was superficial, and occasions no especial suffering. But there was more than this. Dr. Knox's beautiful instantaneous radiogram showed that there was an irregularity in the outline of the liver pointing to a deposit there, and distinct evidence of a mass of secondary growth at the root of each lung.

These thoracic deposits would terminate the story long before the axillary masses had commenced to give very much trouble; and there was, therefore, no indication or justification for an operation of any kind.

A skiagram was shown of a patient who came with a large inoperable growth on the face which was about to ulcerate. The question of palliative operation was considered in order to relieve the patient of some of the discomfort that the inevitable breaking down of the growth would occasion. Dr. Knox took a skiagram, in which it was seen that each lung was studded with nodules of secondary growth, which must cause death within so short a time that an operation would serve no useful purpose.

These skiagrams, so far as I am aware, are among the first in which secondary deposits within the chest have been demonstrated, and the information that Dr. Knox is able to obtain for us is of the very greatest assistance in our work.

This is the evidence in favour of the performance of limited operations for the alleviation of incurable cases of cancer. I am aware that it is very fragmentary, and I believe that any one with larger experience would have been able to put a very much more convincing set of facts before you; but, so far as it goes, I think it shows, first of all the kind of cases in which a limited operation is desirable, and secondly, what benefit can be obtained by such an operation.

I hold the opinion very strongly indeed that at present we do not do enough for our cases of advanced cancer, and I am convinced that the immediate future holds out a good deal of promise as regards the palliation of this miserable condition. An important preliminary to this should, I think, consist in the banishment of the dreadful sense of hopelessness and finality that the present usage of the word "inoperable" creates.

It is perhaps hardly necessary to refer to the question of diagnosis; but it is important to make quite certain first of all that the case is cancer, and secondly, that it is

inoperable. Every method of examination and every means of diagnosis must be exhausted.

Soon after I began to be specially interested in cancer I made a necropsy upon a case that had been diagnosed and treated and allowed to die as inoperable cancer of the uterus. At the *post-mortem* examination I found the vagina greatly distended by a huge growth which was attached to the cervix uteri by the narrowest possible pedicle. If the patient had been examined under an anaesthetic the condition of affairs would have at once been obvious, and she could have been completely cured by the most simple operation.

Technique.

In connexion with the technique of these operations, there are several points of importance. First and foremost, it must be remembered that a radical operation is not being attempted, and that methods that would be adapted to a radical operation are quite out of place. In the case of the breast, for instance, there is no necessity for wide sacrifice of skin, no reason for extensive undermining of the flaps, and often no indication for removal of the pectoral muscles.

It suffices to remove the breast with all obvious growth as far as possible. The wound is then covered in with thick, healthy flaps, which will not be penetrated easily by any growth that may have been left behind in the chest wall. Difficulties with the flaps may, of course, arise when the growth is very large or when it is in an unusual position, but this is exceptional. In breast cases I lay great stress upon thickness of the flaps, as I am convinced it is a safeguard against efflorescence of the growth later in the disease.

The same rule holds good, where possible, in dealing with other sites. For instance, in amputating a leg for inoperable sarcoma of the tibia or lower end of the femur, the line of section should be just above the growth, not necessarily at the hip-joint, for obviously it would be absurd to perform such a serious and such a crippling operation as amputation at the hip-joint for a condition in which cure is absolutely out of the question. Again, in cancer of the tongue, a simple Whitehead operation—the mortality of which is very low—is all that is indicated in those cases where radical measures are not possible. I might multiply examples; but there is no object in doing so, so long as the main principle is remembered: that what one is aiming at is the removal of a maximum amount of disease with a minimum disturbance of healthy tissues.

In all these operations there are two dangers that must be carefully guarded against. One is septic infection of the wound, and the other infection of the wound with cancer cells. The danger of septic infection arises from the fact that ulceration is usually present. Organisms permeate not only the tissues of the growth itself, but are also present in the lymphatics draining the area. It therefore follows that even if infection from the surface be avoided, it may yet arise from the organisms in the deeper tissues. When the ulceration is of small extent the application of tincture of iodine, followed by a layer of collodion, will efficiently guard against any danger arising from this source. When the ulcer is more extensive it is perhaps wiser to go over the surface with the actual cautery immediately prior to the operation. In the later stages of the operation it is well, I think, to flush very thoroughly with warm saline solution, which mechanically removes any organisms lying in the wound. Antiseptics I never use for this purpose, because I believe that they do more harm than good by lowering the vitality of the tissues. The wound should be carefully dried before it is closed, and ample drainage should be provided for.

The danger of cancer infection is more difficult to guard against, for, as my senior colleague, Mr. Charles Ryall, has pointed out, cancer cells may easily be disseminated in a wound and give rise to little deposits of secondary growth, even in stitch holes or the openings for drainage tubes. Copious flushing of the wound and the avoidance of too much handling of the tissues are probably the best means we have of reducing this danger to a minimum.

THE opening of the winter session at the Leeds School of Medicine on October 1st will be marked by the delivery of an address by Professor Sherrington, F.R.S., Holt Professor of Physiology at the University of Liverpool.

THE REACTION OF THE BLOOD SERUM AS AN AID TO THE DIAGNOSIS OF CANCER.

BY

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A PAPER published by Moore and Wilson[6] in 1906 gives the results of their estimations of the alkalinity of the blood serum of cancer patients, as compared with that of healthy persons and of patients with other diseases.

The estimations determined the reactions (1) of the serum to phenolphthalein, (2) of the serum to dimethyl,* (3) of the inorganic salts of the serum to dimethyl. The phenolphthalein results were negative, but the dimethyl results indicated a definite increase in the alkalinity of the serum of cancer patients.

Moore and Wilson were led to this research by the hypothesis which Moore and his collaborators[4 5] had suggested to explain results obtained in previous research on the amount of free HCl in the gastric juice of patients with cancer of any part of the body. They had found that the free HCl was as definitely reduced in cancer of other parts of the body as in cancer of the stomach,† and therefore concluded that the well-known reduction in this latter condition could not be due to local causes, but might, in common with the reduction in other cases be due to "a change in the concentration in hydrogen ions in the plasma and lymph."

It is at once evident that if a definite increase in the alkalinity of the serum can be detected in persons with cancer a valuable aid to diagnosis is secured, and the present paper represents an attempt to determine whether the reaction will lend itself to clinical work. West Watson[12] has published the results of a similar attempt, and his work certainly appears to justify the hope that diagnosis may be helped. I have, however, seen no further records of work on the subject. Moore and Wilson only touched incidentally on the possible clinical value of their work.

Moore and Wilson's second method—estimation of the reaction of the whole serum to dimethyl—appeared the most simple, and therefore, if applicable, the most desirable; the third method—estimation of the reaction of the inorganic salts of the serum—involves processes of evaporation and incineration, and is therefore, *caeteris paribus*, less well adapted to clinical purposes. It still remained, however, if the selected method proved inapplicable, and it must be mentioned that Moore and Wilson had themselves noted it as, perhaps, the more accurate.

It must be remembered that physical methods are at present of little value in determining the comparative reactions of complex physiological fluids such as the serums of different persons; serum is neither measurably alkaline nor measurably acid to such methods. Methods of colour titration, at the same time, have two noticeable drawbacks: (1) The estimations are purely comparative, and no attempt can be made to determine absolute values. The turning points of the different indicators have very different relations to true neutrality, and they are even more widely separated with physiological fluids than with solutions containing free acid or alkali; blood serum is acid to phenolphthalein and alkaline to dimethyl. (2) The colour changes (with blood serum) are so gradual that it is impossible to determine any definite point of change in an ordinary titration; all that appears possible is to mix samples of serum with samples of acid or alkali of different strengths, and determine what strength of acid or alkali is needed to turn the indicator employed.

The results given in this paper make no attempt to show the absolute reactions of the given serums, but merely to show that some serums are *more alkaline to dimethyl* than others.

Technique.—Any improvement in technique is obviously of definite value; the method here described is based on that of Moore and Wilson, but contains several modifications which, I believe, increase its clinical value. I examined many cases by Moore and Wilson's method, but found definite results so difficult to obtain that I was driven to try and alter the technique.

* Dimethyl-amido-azo-benzene.

† This work has been criticized by several writers, notably by Copeman and Hake,[1] to whom Moore[7] has replied. The latter's work has also been supported by Morton Palmer,[9] and others.

Collection of Blood.—The veins of the forearm are engorged, a suitable vein is chosen, and the overlying skin purified; the vein is then punctured with the needle of an antitoxin syringe, and the issuing blood collected in a small test tube of capacity about 3 c.cm. The tube is rather more than half filled and the mouth closed with a plug of cotton-wool.* It is then left in a vertical position for twenty-four hours, and afterwards centrifugalized to obtain clear serum. To avoid excessive evaporation the tubes are left in well-fitting tin boxes in a cupboard; this has been found quite sufficient, but it might be well to use close-fitting rubber stoppers.

Preparation of Acid Solutions.—A series of dilutions of normal sulphuric acid is prepared and kept in well-stoppered bottles; the dilutions run in series as follows: $\frac{N}{4}$, $\frac{N}{4.5}$, $\frac{N}{5}$, etc., to $\frac{N}{7}$, and are thus seven in number. They must be tested from time to time against sodium carbonate of known strength, and should be found to remain constant for a considerable time. When required for use, a small quantity of acid is, after shaking, poured into a watch-glass or, preferably, a small glass staining dish.

Titration.—Two drops of a 1 per cent. alcoholic solution of dimethyl are dropped on a filter paper. A small quantity of distilled water is then drawn into a capillary pipette, a bubble of air allowed to follow, and, after this, serum drawn as far as a mark about 3 cm. up the pipette; a second bubble of air is then admitted, and, finally, the particular acid solution required is drawn up to the same mark. The pipette now contains equal quantities of serum and acid and a trace of distilled water. The contents are blown out on to a porcelain slab, thoroughly mixed by aspiration, and finally blown out on to the centre of the dimethyl drop. If no pink colour appears† in the centre of the yellow drop, the process is carried out with stronger acid solution till the pink change first occurs. If, on the other hand, pink appears at the first attempt, weaker acids are used until the change is no longer obtained. The dilution which gives the first pink reaction is taken as the index; if, for instance, pink appears with $\frac{N}{5}$ acid, but not with $\frac{N}{5.5}$, the alkalinity to dimethyl of the serum is reckoned as equivalent to $\frac{N}{5}$ or 0.200 N.

To prevent absorption of alkali from glass, all the glass materials used are subjected to immersion in strong HCl, are afterwards thoroughly washed in distilled water, and finally dried in an oven at 110° C.

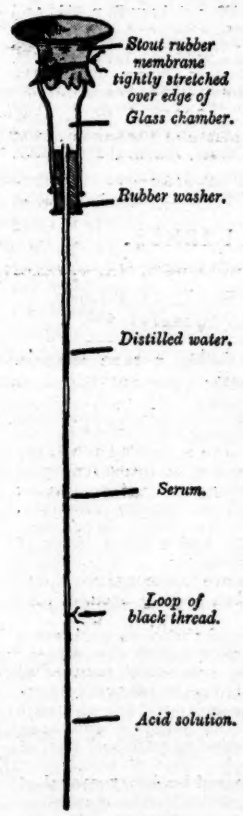

Diagram of pipette.

Only two of my departures from Moore and Wilson's technique need any notice.

(1) *Collection of Blood.*—Moore and Wilson collected their blood in Wright's capsules, the ends of which were afterwards sealed in a Bunsen flame. Loss by evaporation is thus prevented, as also is any slow action of the air, and controls were therefore necessary before adopting the method described above. In 6 cases the blood was collected by both methods, and in all 6 cases the readings for the two methods were precisely the same. Drawing blood from a vein is, I think, slightly simpler for the operator and less painful to the patient than the use of Wright's capsules.

(2) *Titration.* — Moore and Wilson added a fixed quantity of indicator to each of their acid bottles, and obtained their results by inspection of the mixture of serum and acid and indicator blown out on a white slab, and at first I followed this technique. Preliminary experiments with solutions of sodium carbonate of known strength in place of serum gave extremely clear readings, but with the serum itself I found accurate readings even more difficult than I had expected, and after many attempts I concluded the reactions were not sufficiently definite to justify their use in clinical work.

I therefore tried the filter paper method, using solutions of dimethyl of strengths varying from 0.001 per cent. to 2 per cent., and I finally used the strength of 1 per cent. It is clear that the use of so much indicator violates the laws of good titration, and that nothing but results can justify it. It must be borne in mind that in the present instance the results aimed at are purely *comparative*, and that nothing in the way of absolute determination of reaction is desired; that the 1 per cent. solution was only adopted after proper trials of other strengths (and, I may add, of other indicators); and that for present purposes a working clinical method is the main object of consideration. With these facts remembered, I believe that the results obtained by the 1 per cent. solution will justify its use, for a clear reading can nearly always be obtained.

The pipette figured in the diagram deserves a short mention; the improvements are of minor importance, but I believe that they conduce to accuracy. The diagram explains itself, and it is only necessary to say that the rubber membrane must be fairly stout; a fresh capillary tube can be slipped into the washer for each series of titrations, and a small loop of black thread affords a clearer mark than the traditional blue chalk. With this pipette the most inexpert person can control his solutions with complete ease and accuracy.

The following tables give the results so far obtained:

It will be seen that the average alkalinity of the cancer series is 0.190N, and is, therefore, appreciably higher than that of the non-malignant—that is, 0.173N. Averages, however, are of little value in attempts to diagnose individual cases.

It appears that a reading of 0.200N or over affords some presumption of the presence of cancer; and it is, in my opinion, sufficient to justify an exploratory operation in doubtful cases. It must be particularly noted that the high reading is most likely to be obtained in early cases

TABLE I.—*Reaction of Blood Serum in 24 Cases of Cancer.*

No.	Sex.	Age.	Diagnosis.	Alkalinity to Dimethyl.	Remarks.
1	M.	59	Cancer of axilla	0.200N	Recurrent.
2	M.	65	Cancer of larynx	0.222N	No microscope.
3	F.	50	Cancer of breast	0.200N	—
4	F.	50	Cancer of breast	0.182N	—
5	F.	43	Cancer of breast	0.200N	—
6	F.	67	Cancer of uterus (cervix)	0.200N	—
7	F.	56	Cancer of breast	0.200N	—
8	F.	30	Cancer of both breasts	0.182N	Very early.
9	F.	51	Cancer of uterus	0.182N	—
10	M.	46	Cancer of stomach	0.182N	Free HCl present in gastric juice.
11	M.	55	Cancer of jaw	0.200N	Spheroidal celled, undergoing colloid degeneration.
12	M.	67	Cancer of cervical glands	0.182N	Secondary to cancer of lip removed 12 months before.
13	F.	37	Cancer of uterus (body)	0.200N	—
14	F.	56	Cancer of stomach	0.200N	—
15	M.	70	Cancer of lip	0.200N	—
16	F.	48	Cancer of axillary glands	0.182N	Right breast 11 years previous; left breast 5 years previous.
17	M.	46	Cancer of neck	0.182N	Sarcoma.
18	F.	43	Cancer of left ovary	0.166N	Anaemic.
19	F.	47	Cancer of uterus (cervix)	0.200N	Very early.
20	F.	52	Cancer of breast (duct cancer)	0.166N	Anaemic.
21	M.	72	Cancer of lip	0.166N	Anaemic.
22	F.	48	Cancer of breast	0.166N	—
23	M.	48	Cancer of stomach	0.200N	No free HCl; no microscope.
24	M.	66	Cancer of rectum	0.182N	Colotomy; no microscope.
			Average	0.190N	

* To avoid the influence of the alkaline tides of digestion I made all my collections between the hours of 11.30 and 12.15 in the morning, the last meal having been finished about 9 o'clock.

† In order that the time relations of the various titrations may be the same, the *immediate* colour effect is alone considered.

TABLE II.—*Reaction of Blood Serum in 21 Non-Malignant Cases.*

No.	Sex.	Age.	Diagnosis.	Alkalinity to Dimethyl.	Remarks.
1	M.	35	Healthy	0.165N	—
2	M.	31	Healthy	0.182N	—
3	M.	17	Varicocele	0.182N	—
4	M.	29	Varicocele	0.165N	6 days after operation, 0.156N.
5	M.	20	Varicose veins	0.182N	8 days after operation, 0.182N.
6	M.	20	Varicocele	0.165N	9 days after operation, 0.165N.
7	F.	50	Dyspepsia	0.165N	—
8	F.	47	Dyspepsia	0.182N	—
9	F.	48	Gall stones	0.182N	—
10	F.	63	Pernicious anaemia	0.165N	Haemoglobin, 25 per cent.
11	M.	50	Tuberculous hip	0.166N	—
12	M.	55	Gall stones	0.166N	—
13	M.	42	Varicose veins	0.182N	6 days after operation, 0.182N.
14	M.	27	Inguinal hernia	0.182N	—
15	F.	18	Diabetes	0.166N	Urine contains di-acetic acid and acetone.
16	F.	45	Phlebitis	0.166N	—
17	M.	40	Malaria and dysentery	0.153N	—
18	M.	36	Lipoma of back	0.182N	—
19	M.	33	Colitis	0.166N	—
20	M.	28	Appendicitis	0.182N	—
21	F.	32	Endometritis	0.18 N	—
			Average	0.173N	

TABLE III.—*Six Doubtful Cases.*

No.	Sex.	Age.	Diagnosis.	Alkalinity to Dimethyl.	Remarks.
1	M.	52	? Cancer of oesophagus	0.182N	—
2	M.	48	? Cancer of stomach	0.200N	—
3	M.	55	Cancer of tongue and cervical glands, removed 18 months previously. No signs of recurrence	0.166N	—
4	F.	37	? Cancer of uterus	0.200N	—
5	M.	51	? Cancer of oesophagus	0.182N	—
6	M.	33	? Cancer of pancreas	0.182N	No free HCl in gastric juice

in which the general metabolism is not seriously disordered—that is to say, in precisely those cases in which the diagnosis is most likely to be obscure, and in which early operation is most likely to benefit the patient. The reaction is obviously of little value in the superficial cancers—as of the tongue and cervix uteri—when tissue can be obtained for microscopical examination. There still remains, however, the large group of deep cancers, notably of the breast, stomach, and body of the uterus.

The figures 0.200N or 0.222N appear twelve times out of twenty-four in the first table, but not once in the 21 cases of the second. It can scarcely be hoped that they will never appear in records of non-malignant cases; but I have not yet obtained them, except possibly in the two cases in the third table which give the figure 0.200N. It must be noted that the word "doubtful" signifies "*still* doubtful." Many of the other readings were obtained before the clinical diagnosis was certain.

The clinical evidence points to both of the two above-mentioned cases being malignant, but it would obviously be incorrect to consider them as such till the diagnosis is clear; their subsequent histories will be of some importance, and I regret that I cannot yet speak with certainty of them.

While the high figures afford some presumption of the presence of cancer, it is quite clear that low figures do nothing whatever in the opposite direction; I believe that further work may bring a much larger proportion of cancer cases into line, but for the present any suggestion whatever of a negative diagnosis would be unjustifiable.

A careful study of Moore and Wilson's and West Watson's figures will show that they suggest similar deductions. West Watson makes a distinction between "advanced" and "inoperable" cases; such a distinction is very arbitrary and must be extremely difficult to draw, but I believe, nevertheless, that his point—that in advanced cases the increasing anaemia masks the altered reaction to dimethyl—is important. It is possible that a classification based on haemoglobin estimations may be useful; such a classification would still be very arbitrary, but it would at least be easily made.

I have purposely discussed my results very shortly, because it is clear that they are at present far too incomplete to justify definite conclusions. I hope later to have the opportunity to extend them. If the presence of a change in reaction of cancer serums to dimethyl or other indicators is confirmed, it opens up two very wide questions: (1) What is the chemical nature of the change? and (2) What is the cause—whether antecedent to, or produced by, the development of the cancer? It is impossible to do any work on the subject without considering these questions; but here, again, my views are at present too nebulous to merit quoting. For those interested in the subject it is necessary to read in full the extremely lucid and interesting papers of Professor Moore and his collaborators; suggestive facts will also be found in the writings of Grawitz,[3] Mottram,[8] and Royle.[10,11] The fullest bibliography that I know on the subject of estimation of the reaction of the blood on blood serum will be found in the article by Dr. Mercier Gamble[2] in the *Journal of Pathology* for 1906.

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SARCOMA OF THE UTERUS.

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SARCOMA of the body of the uterus being a rare disease, the following notes may be of interest:

A married lady, aged 48, consulted me about excessive menstruation. She had been quite regular until about twelve months earlier, when the periods became irregular and there was an excessive loss of blood. There was no intermenstrual leucorrhoea. She appeared markedly anaemic, with a peculiar yellowish tinge, almost suggestive of pernicious anaemia. Although married for twenty years she had never been pregnant. There was no loss of flesh, and a thick layer of abdominal fat prevented detailed palpation.

Vaginal examination revealed an enlarged uterus, not, however, reaching above the pelvic brim, but feeling broader and harder than normal.

As the patient seemed so anaemic, and there were anaemic bruits over the mitral and pulmonary areas, and as she suffered agonizing pain every few weeks when semi-solid masses of materal like blood clots were expelled from the uterus, hysterectomy was advised. I found that the temperature at night varied from 99° to 100° F. A diagnosis was made of sloughing fibroid, infecting the peritoneum and causing pain and rise of temperature.

Although the patient was in a poor state of health, removal of the uterus seemed her only chance, and she entered our nursing home, where, with the valuable help of my colleague, Dr. J. B. Hughes, I did a supravaginal amputation of the uterus. The operation proved difficult. The omentum was adherent to the fundus of the uterus and to the ovaries and Fallopian tubes.

Both tubes were inflamed and much enlarged. The uterus was about 4 in. long and 3 in. to 4 in. in width. It felt of stony hardness, and on its peritoneal surface were three hard masses as big as large peas. It extended well into the pelvic peritoneum on either side. After separating all adhesions, I first removed both tubes and ovaries, and then by strong traction on the fundus with a broad volsellum tied off the broad ligaments and uterine arteries and excised the supravaginal portion of the

uterus. The peritoneal flaps were stitched together, the cavity carefully dried, and the abdominal wound closed.

She made an uninterrupted recovery and went home at the end of a fortnight. On slitting the uterus up a mass of sloughing tissue was seen half embedded in the wall, and half projecting into the uterine cavity. It was about the size of a small Tangerine orange. The half of the uterus containing the sloughing tumour was sent to the Clinical Research Association, and the following report was furnished: "This is a malignant growth arising in the endometrium and having the characters of a round-celled sarcoma. It is made up of rather large cells enclosed in a delicate stroma with thin-walled vessels, and is infiltrating the muscle. It is not in the least like a fibromyoma."

Hart and Barbour state that sarcoma of the uterus is extremely rare. Gessner in his article on sarcoma uteri, in Veit's *Handbuch d. Gyn.*, states that he found only 18 sarcomata in 9,133 cases. Roger Williams found only 2 sarcomata in 2,649 uterine tumours.

The diagnosis of the condition is not easy. In this case pain at intervals was a marked feature, and was of the character described by Gusserow as "intense and rending." Clay and A. R. Simpson, however, state that the absence of pain is a marked feature of sarcoma as opposed to carcinoma.

The absence of the "free rice-water discharge" was noteworthy, though during the later stages the blood-clot-like masses which were expelled would probably have shown sarcoma cells if they had been microscopically examined. The peculiar cachexia certainly suggested malignant disease, but the excessive loss of blood and severe attacks of pain appeared to account for that condition. Had I suspected malignancy at the time of operation I would certainly have done total hysterectomy.

THE AUTOPLASTIC OVARIAN GRAFT AND ITS CLINICAL VALUE.*

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A YEAR ago I showed before the Birmingham Branch of the British Medical Association a patient upon whom I had performed heteroplastic ovarian grafting—that is, the transplantation of the ovary from one patient to another. Shortly after reading this paper an opportunity occurred of trying the effect of an autoplastic graft; in other words, the transference of ovarian tissue from its normal position in the pelvis to a site elsewhere in the same subject. The result of this experiment has so far been entirely successful.

The details of the case are as follows:

The patient, aged 29, was sent into the General Hospital, Birmingham, by Dr. Branday of Handsworth on April 3rd, 1912, with a history of repeated attacks of pelvic inflammation. The woman had been confined to bed for one or two months with severe pain during each year for the three years previous to admission. Dysmenorrhoea had been severe for the last two years, following the birth of her last child. During this time the catamenia had been regular.

On admission the patient looked anaemic and ill and was considerably wasted. Bimanual examination showed that the uterus was fixed by adhesions, and that a very tender rounded swelling was present in the region of each uterine appendage, occupying the corresponding posterior quadrant of the pelvis.

Operation.

On April 4th, 1912, I performed laparotomy through a vertical 4 in. incision over the right rectus muscle, and found both uterine appendages in a condition of severe chronic inflammation; in fact, far too advanced for any conservative measures to be employed. The right ovary was the seat of a suppurating lutein cyst, the size of a small orange and was firmly adherent to the corresponding Fallopian tube. The left ovary was strongly bound down to the left tube and had to be removed with the latter, which was also chronically inflamed. The uterus, although presenting numerous adhesions on the peritoneal aspect, appeared normal, and was left *in situ*. Both uterine appendages were removed, but before the abdominal wall was closed, a portion of the left ovary was grafted into it. The healthy half of the organ was cut into minute fragments, and these were scattered into the sub-peritoneal connective tissue and within the rectus muscle and rectus sheath. Care was taken never to remove the grafted material from the body fluids. Until it was required, it was allowed to remain in Douglas's pouch. The abdominal incision was closed in layers and no antiseptics were applied to the wound.

The patient made an uninterrupted recovery and the incision healed by first intention. No undue tenderness has been noticed by the patient in the line of the incision either during convalescence or since.

After-History.

The after-history of the patient is quite satisfactory, and it appears certain that some of the ovarian grafts have established themselves and are functioning. I heard no more of her until the end of January, 1913, when I communicated with Dr. Branday, and he very kindly made arrangements for me to examine her. The patient told me that she had not suffered from any "flushing," palpitation, or nervous phenomena usually associated with the artificial menopause. The most important evidence, however, consists in the menstrual history since operation. The first period occurred from April 6th to 16th, 1912, commencing two days after the operation, when it was normally due. The next period began two months after leaving the hospital and lasted ten days. The following period occurred three months later, lasting six days. On January 12th, 1913, a normal period occurred, and on February 13th uterine haemorrhage again commenced. The last three periods have occurred at monthly intervals, and it appears, therefore, that regularity is established. During the catamenia rather severe headache has been present, but this has not been noted at other times. No dysmenorrhoea has occurred, and there has been no tenderness in the abdominal scar during the periods.

Inquiries as to the sexual life since operation showed that no dyspareunia is present, and that the sexual functions are exercised in a perfectly normal manner.

The case has not been recorded until almost a year after the operation in order that a fair estimate might be made of the result. So far this is as satisfactory as could be desired. Various criticisms may, of course, be urged against the acceptance of the graft as the cause of success. It is well known, for example, that even after double oöphorectomy menstruation may continue for a few months. It rarely continues, however, as long as ten months after the operation, and furthermore, the periods progressively decrease in duration. In the present case there is certainly no diminution, and, if anything, the flow is excessive. Again, it may be asked whether the uterine haemorrhage is really of the nature of menstruation. The periodicity and the association of molimina in the form of headaches certainly strongly favour this view. The point may be settled by an examination of the menstrual fluid, and the demonstration in the same of an excess of calcium salts and absence of fibrin. This investigation will shortly be undertaken. Another criticism may be offered in the suggestion that all ovarian tissue was not removed from the pelvis, and that it is particularly easy to leave a portion or an accessory ovary when numerous adhesions are present. In the case here recorded I am inclined to think that this fact need not be entertained. The uterine appendages were removed without difficulty, the right ovary was replaced entirely by an abscess cavity, and the left organ was adherent to the corresponding Fallopian tube only and not to the neighbouring viscera. At the time a careful search was made for any displaced ovarian tissue or accessory ovary, and none was seen as far as macroscopical appearances were concerned.

Literature.

The subject of ovarian grafting is a fascinating one, and I am convinced that it can take a very definite and important place in gynaecological surgery. The literature upon the subject is scattered, but is yearly increasing in amount, and a sufficient number of authentic cases are now recorded to prove that autoplastic grafts can be successfully made, and that for a time at least they will functionate. The work of Scott Carmichael of Edinburgh,[1] Higuchi of Tokyo,[2] Nattrass of Melbourne,[3] and others, has proved that in animals, especially in the dog and rabbit, it is possible to transplant ovarian tissue, and that the grafts are usually successful in producing the specific internal secretion. Nattrass's [3] experiments are extremely important in this respect. He was able in the case of the rabbit to transplant ovarian tissue into the subcutaneous tissues, and on to the peritoneum, kidney, spleen, and periosteum. At first, fatty degeneration of the stroma cells takes place, and it appears that this occurs in inverse ratio to the vascularity of the tissues into which the graft is made. When the tissue is examined at a later period, absorption and repair of the pathological products has occurred, and the production and maturation of Graafian follicles takes place. That the transplanted organ exerts its influence

* A paper read before the Birmingham Branch of the British Medical Association.

over the sexual function has been proved by the same author in the case of a fox-terrier bitch, in which oestrum was observed several times, and the ovary was found to contain large Graafian follicles 370 days after the grafting had been performed.

Evidence is not lacking, moreover, that grafting may be successfully accomplished in the human subject. Franklin H. Martin[4] has published the histories of six patients who continued to menstruate after transplantation of the ovaries; and Davidson[5] has recently recorded before the Edinburgh Obstetrical Society the case of a patient who began to menstruate three months after the operation and has continued to do so since without either local or pelvic pain. To those interested in the subject the valuable monograph of Sauvé,[6] published in 1909, may be recommended as containing a full account of the history and earlier experiments in this field of investigation.

"Seedling" Grafts.

In almost all cases recorded in the literature, with the exception of those of Scott Carmichael, the graft has consisted of the whole or a very large portion of the ovary. I am inclined to think that much greater success will attend the use of small portions of tissue, as is done in the case of the thyroid and other glandular tissues. Because the ovary is a small gland, it does not necessarily follow that it can be lifted bodily and placed in a new position. The vitality of the tissue is much more likely to be maintained if "seedling" grafts are made. Furthermore, the chances of success are proportionately increased by the number of grafts made.

Site of Implantation.

As regards the site of implantation, my own preference is for the rectus muscle and subperitoneal tissue. The reasons for this are as follows: In the first place, a good vascular supply is assured; secondly, the grafting may be most easily accomplished in this position, and involves very little increase in the time of the operation; lastly, should the graft require removal at any time, either from late suppuration or the development of a neoplasm, it may be reached easily and without the risk of opening the peritoneum. Further observation, of course, must show in what proportion of cases it is necessary to interfere at a later period for morbid changes occurring in the graft. So far as published records point, this eventuality is extremely slight.

Indications.

The indications for ovarian grafting will naturally be limited. One of the most important uses for the operation is indicated in the case recorded earlier in this paper—namely, as a conservative measure when it is necessary in a young woman to remove both uterine appendages for old-standing inflammatory disease without having to sacrifice the uterus.

Opinions will undoubtedly differ as to the proportion of cases in which this is possible. Undoubtedly a large number of cases occur where the uterus has to be removed with the appendages. Nevertheless, it is remarkable sometimes how rapidly and completely adhesions disappear when the inflammatory foci in the tubes and ovaries are removed. Furthermore, observations that I have recently made upon the bacteriology of the uterus in cases of chronic pyosalpinx have led me to believe that the endometrium is, as a rule, sterile, and therefore I have no compunction in leaving the uterus in such cases, especially when it may be possible to graft ovarian tissue into the abdominal wall. Another indication which I put forward as a suggestion is the possibility of transplanting fragments of ovarian tissue in cases of severe dysmenorrhoea. Instances of most intense menstrual pain undoubtedly occur where the source of discomfort lies, not in the uterus, but in the ovaries. Curetting and drugs rarely cure such patients, and if an examination is conducted during the height of the attack the ovaries can frequently be palpated as extremely tender bodies occupying the posterior quadrants of the pelvis. In more than one case oöphorectomy has been and is still practised for this condition, and I know of instances where panhysterectomy has been performed. A cure is undoubtedly effected thus, but may not it be possible to bring about the same result without unsexing the patient, by substituting ovarian grafting? Many of these patients are young women, and it appears more rational to attempt a cure by conservative measures rather than acknowledge the failure of our art by subjecting the patient to a radical operation in which she loses those very organs which produce the hormones characteristic of her sex.

Conclusions.

In conclusion may be summarized those points which I regard as essential to the success of a grafting operation:

1. Absolute asepticity and the avoidance of strong antiseptics which would destroy the vitality of the tissues. The apparent contradiction to this maxim in the case of chronic pyosalpinx and salpingo-oöphoritis is met by the fact that the pus in such cases is usually sterile, and the tissues may be treated as surgically "clean."
2. The employment of minute or "seedling" grafts.
3. The presence of a good vascular supply in the tissue used as the bed for the graft. Muscle is entirely satisfactory for the purpose.
4. The ovarian tissue should be left in contact with the body fluids within the peritoneal cavity until it is required for the purposes of the grafts. In the case recorded in this paper the ovary was placed in Douglas's pouch until the time arrived for closure of the abdominal wound.

The object of this communication will have been attained if it serves to draw attention to the investigations of the various workers in this field throughout the world, and to the possibilities that underlie the wider adoption of the principle. Laboratory researches have already demonstrated the success that may be obtained, and it now remains for the gynaecological surgeon to apply these results, to glean fresh details from the after-results of his operations, and to formulate indications for the future employment of this branch of our art.

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NOTES OF A SUPPOSED CASE OF PELLAGRA.

BY

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THE patient, James K., is a farmer, aged 66, residing some five or six miles from Belfast. He has generally been healthy, but has been liable all his life to frontal headaches, lasting one to two days, with relief after vomiting. For the past three or four years he has consulted Dr. Reid during spring and autumn for a dermatitis resembling eczema on the back of his hands and on the chin and parts about the mouth. This spring and summer the condition became much worse, especially on the hands; the back of the hand down to the finger-tips became brawny and much darker in colour; they had, he said, been black since May, and the discoloration had been most marked during the fortnight before he came under observation; the palms were free; there was desquamation at intervals of the skin of the nose and chest, and Dr. Reid suspected pellagra. The patient was seen by Dr. Calwell on July 15th, 1913, and subsequently in hospital in his skin clinic.

The patient's intelligence is good, but his memory had recently failed and he was apt to worry unduly about trifles; he was rather feeble in bodily health; although always spare, he had recently become thinner and was somewhat nervous; his gait was shuffling, his steps short, and his movements stiff; the right pupil was smaller than the left, and both reacted to light; there was no rigidity; the knee-jerk was feebly marked in the right leg and absent in the left. The back of the hands was darkish brown, as if stained with walnut-juice, and where

the superficial cuticle was peeling the skin was red and irritable; there was some slight darkish discoloration on the red eczematous parts of the cheeks, forehead, and front of the chest. His lips smarted, and he complained of soreness at the angles of the mouth; he said his sight was failing, and that during the last month or so there had been occasional diplopia; lately there had been some tingling in his feet and slight staggering; slight irregularity of the heart (extrasystoles) and a faint mitral systolic murmur without hypertrophy were noted.

He stated that a stream of water from some marshy ground had been piped into his yard and had been continually used for farming purposes. No other member of the family has been affected in the same way.

The affection is certainly peculiar, and does not tally with any of the common forms of skin or nervous affections. The resemblance to the verbal description and to the illustrations of pellagra in the JOURNAL is close.

EIGHTY-FIRST ANNUAL MEETING
OF THE
British Medical Association.

Held in Brighton on July 23rd, 24th, and 25th.

PROCEEDINGS OF SECTIONS.

SECTION OF DISEASES OF CHILDREN,
INCLUDING
ORTHOPAEDICS.

G. F. STILL, M.D., F.R.C.P., President.

DISCUSSION ON AFFECTIONS OF THE HEART IN CHILDHOOD.

OPENING PAPERS.

I.—F. J. POYNTON, M.D., F.R.C.P.,

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IN order to avoid drifting in this many-sided subject I have taken as the central thread of my remarks the prevention of heart disease in the young.

Such an undertaking as the prevention of heart disease requires a wide appreciation of the many factors that combine to make heart affections in the young a very serious problem in this country, and this leaves an open field for the many speakers who will, I hope, join in the discussion to cover ground I cannot reach, to add their valuable experiences, and to make suggestions which will be of real service to the children with whom we are concerned.

Now, it is clear that this question of prevention must be largely influenced by the views that each of us may hold upon the chief cause of heart disease in the young. Convinced as I am that rheumatism is an infective process, it follows that for me the great factor in the causation of heart disease in childhood is an infective process of some kind or another, and the most frequent of these the rheumatic.

Then we come to a point upon which an expression of opinion will be of value, and that is upon the extent to which agencies of a non-infective nature—such, for example, as overstrain and nervous disorders—take a part in the production of heart disease in the young.

This, if we are to be practical, is not a simple problem, for though we may readily admit that it may be most difficult to overstrain a young and sound heart, we have to meet the question under a somewhat different aspect. How frequently, I would put it, do you believe from your experiences does overstrain of the heart become a prominent factor by determining bad symptoms in children who are thought to be healthy, but who have either recently suffered from some illness, such as, for example, a mild influenza, or have inherited, as I believe some do inherit, a heart of deficient reserve power?

I agree with the view that pure cardiac overstrain is unusual, but when we consider the large schools it would seem quite possible that a boy may strain his heart when he has been attacked by some infection of so slight an apparent gravity as scarcely to have attracted attention. Then, again, there are boys of a nervous temperament who probably by virtue of this very temperament may excel in games of skill over their larger and duller rivals, and also are sometimes the victims of a condition termed by some "neurasthenia," which, whatever we call it, shows itself in cardiac palpitation, nervousness, shortness of breath, and other signs of a breakdown.

In the consideration of heart-strain it appears to me that a good deal too much stress has been laid upon the muscle of the heart as opposed to the cardiac nerves, for in diseases of the heart this nervous element is of great importance, and I always think of the cardiac muscle and cardiac nerves as merging insensibly into one another.

The point I am wishing to make here is this: Granted that pure overstrain of a sound young heart is very rare, to what extent does this Section think that physical and mental overstrain takes part in producing cardiac dilatation and functional symptoms in children as we meet with them in everyday life.

Among conditions clearly not infective in nature I would mention the association of remarkable disturbances of rhythm with the occurrence of convulsions. The disturbances have lasted in some instances for months and even for two years after the last recorded fit. An electrocardiogram from an infant of 2 years, kindly taken for me by Dr. T. Lewis, shows an irregularity due to auricular extrasystole which had, to my personal knowledge, been present for eighteen months. The infant at 3 months had suffered from convulsions, but since that time had never had an attack. During the first six months of my observations the irregularity had been much more striking than at the time the tracing was taken, and no remedies, whether for the digestion or for the heart, appeared to me to have any influence upon it. About eight months after I first saw the child a systolic mitral murmur became audible, but at no time could I find any symptoms pointing to cardiac weakness. Up to the present the irregularity continued, and the case remains to me a problem.

I am not prepared to say that the convulsions have any real connexion with these irregularities of the heart, but put these cases before you in the hope of gaining further information upon them.

Anaemia, as we know, often owns an infective cause; and it is an element, I think, of considerable importance in aggravating the course and symptoms of organic heart disease. Hyperthyroidism at and about puberty is another condition of interest, but when the whole field is surveyed it seems to me that the chief factor in the heart disease of childhood is an infection of some kind or another. With congenital heart disease I cannot deal in this introduction.

A study of the morbid anatomy and microscopy of organic heart disease, coupled with experimental studies, although they involve details ill suited for occasions such as these, are valuable methods for obtaining a clear picture of the actual processes; and, if we wish to prevent heart disease, it is essential that we pay close attention to such studies, in order to realize what is preventable and what can only be palliated.

A vegetation may form on the cardiac valve of a rabbit in three days, and definite myocardial changes appear in the same short time. In five weeks a pericardium may become generally adherent in a rabbit, and in three months in a child about the same degree of resolution may be obtained.

The focal lesions in the myocardium that result from rheumatism form the basis of new investigations with the polygraph and electrocardiograph, and we hope that in the future these may bring during life additional evidence upon the relative importance of myocardial affections in rheumatism, just as the experimental studies and pathological studies add an accuracy to our knowledge of the character of these myocardial lesions. The bearing of these latter studies upon prevention is very clear, for they show that when infective processes are highly destructive or very persistent, scar tissue must form if there is to be recovery, and then we are unable to undo the harm, and can at best only attempt at preventing greater damage or palliate the harm that has been already done.

Our clinical knowledge tells us plainly that when a certain degree of damage has been done the child must be

at best a permanent invalid. Morbid anatomy and microscopy explain the reasons. Experiment warns us of the rapidity of some of these infective processes, and the combination of these methods of inquiry prepares us to realize that the problem of prevention is a difficult one, and one to be only partially realized.

The symptomatology of cardiac disease in childhood is of the greatest importance from the view of prevention, and upon it experiment has also thrown considerable light. I have already touched upon the rapid development of organic lesions, and would add now that strepto-diplococci obtained from the inflamed tonsils of the rheumatic will produce carditis on intravenous inoculation into animals. In this, rightly or wrongly, I see the explanation of a very important group of cases—namely, those in which a child after a sore throat develops heart disease without any articular symptoms, muscular pains, or other evidences of rheumatism. For our purpose it matters little what we call these micro-organisms—the great point is that in animals also a carditis may arise with or without articular symptoms. This group is one that is going to baffle us very much in the matter of prevention, because, as we all know, the early signs of cardiac disease are often so slight that the medical man is not even consulted until the lesion is established. Nevertheless, it is essential that we realize that one site of infection is the tonsils, and to this in the future we can give increasing attention. The great importance of sore throat in the history of children's heart disease is undoubted, for we recognize that in addition to rheumatism, diphtheria and scarlet fever are causes of heart affections.

Among the symptoms of heart disease we naturally must pay particular attention to those which point to injury of the myocardium, for this is the mainspring of the heart. I need not insist upon this point, for Dr. James Mackenzie, in his well known writings, has done so in a far abler fashion than I can, though perhaps, if I may not be thought ungracious, he has somewhat underrated the intelligence of us London physicians, for, speaking for myself, as a pupil of Sir William Broadbent, I have been fully alive to the importance of the myocardium.

I think, too, in childhood, as in adult life, we must not forget that the valvular lesion may be the prominent one, and I would choose three examples — in malignant endocarditis, in the combined mitral and aortic regurgitation when it is severe, and in mitral stenosis. I have seen many cases of mitral stenosis in which, if we could only dilate the orifice, I am convinced the cardiac muscle would prove sound enough to carry on the circulation. It is a lesion which in the child may cause no symptoms until the increasing obstruction begins to overweight the power of a muscle, which not infrequently after death is found to be almost sound.

Whether the new graphic methods will help us greatly in estimating the strength of the myocardium, or even in enabling us to detect that it has been damaged, must be awaited patiently, for the interpretation of the tracings and the significance of such interpretations must require prolonged investigation. Breathlessness and wasting, and, in acute myocardial disease, general muscular listlessness and syncopal attacks, are important signs of a weakened cardiac muscle, and to that must be added nervousness and marked variations in the pulse-rate on slight exertion. Chorea is an extremely important warning of the possibility of heart disease, and I would particularly emphasize that the origin of mitral stenosis is repeatedly associated with recurrent chorea in female children. I have many times now traced the development of this lesion under these circumstances.

I am struck, when I look back over my experience of rheumatic heart disease, with the great dependence of the ultimate result upon the character of the infection. Few facts are more convincing of the infective nature of the complaint than this. A virulent attack may in a few weeks damage a heart irretrievably by profound myocardial poisoning, while, on the other hand, a sharp attack with pericarditis, in which pallor, prostration, and nodule formation are not prominent, may result in a very fair recovery. There is much to be done in this country, I think, in the way of prevention of this virulent rheumatism. Parents are not sufficiently alive to the dangers that delicate, fragile children with a family tendency, run in being insufficiently clothed about their extremities, or careful enough in protecting them from cold winds—and especially cold damp—or in paying attention to their sore throats and "growing pains." Lack of knowledge is, I think, at the bottom of a good deal of this incautiousness, but I should welcome the experience of other speakers upon these points, and their opinions as to the good that is to be expected from simple precautions in these directions.

The routine school life of the child in a council school has some grave disadvantages. We may easily overrate these, but I think in the future the disadvantages will meet with much more attention. I feel that I am in danger of dwelling overmuch upon rheumatic heart disease, and I shall not detain you with any more remarks upon the symptomatology further than to add that the great cause of a cardiac breakdown in these children is a fresh infection, although there is no doubt that overstrain of an organically damaged heart will also, though much less frequently, I think, produce disaster.

The treatment of rheumatic heart disease furnishes the strongest evidence that I can bring in favour of continued attempts at prevention. I think it is most unsatisfactory, and though prepared to hear that others may feel more encouraged, I must confess that I do not think we are making much headway. I have expressed my opinion upon the salicylates too often to need to repeat it here. I am well aware that many advocate the use of large doses, but I have convinced myself that delicate rheumatic children do not do well under such treatment, and I am not persuaded that strong ones show any decisive proof that these drugs are specific. With regard to vaccine treatment, I look with dismay at the giving of large doses of streptococcal vaccines in acute carditis, for I have seen pericarditis follow immediately upon their use and light up again when apparently quiescent. Not that for one moment I am a blind opponent of vaccine therapy; on the contrary, I believe there is some precious germ of truth hidden in the mysteries of these specific immunity reactions, but to risk hazardous doses of these vaccines in the present state of our knowledge seems to me wrong. As regards the diet, I look upon it as I would in any other cardiac infection—as a matter for regulation in accordance with the digestion and complications, and have entirely abandoned any mysterious dread of meat for rheumatic children.

It may be asked, do I suppose enucleation of the tonsils will prevent acute rheumatism? My answer must be that I know it does not, but if they are diseased it removes a focus of infection and improves the general health, in proof of which I have seen striking examples. When we remember the size of the rheumatic diplococcus, 0.5 μ, we can realize that there is ample opportunity for it to get a foothold in the throat or naso-pharynx after enucleation of the tonsils. Tonsillotomy in acute tonsillitis may precipitate an attack of rheumatism, and under the scarred stumps foci of infection may remain, as I have also seen on more than one occasion. It seems to me an imperfect operation for the rheumatic.

To what extent bad teeth and unhealthy gums are responsible for heart disease in childhood is a point upon which I should like to hear opinions. My own clinical experience has not impressed me with the association of rheumatic heart disease and pyorrhœa, but I feel that I am open to conviction upon this point, which undoubtedly requires most careful consideration. I may add that the establishment of special convalescent homes I look upon as an important aid in the prevention of rheumatic heart disease.

At this point I would like to make some remarks upon certain cases of rheumatic carditis treated by vaccines which were obtained either from cultures from the pericardium of a fatal case of rheumatism or from the stock of a reliable firm of chemists. My object is not to attempt to settle the value or uselessness of such treatment, but to put into prominence the difficulties that there are in arriving at any conclusion, and the caution with which we must accept sanguine generalities upon these points.

Only a few illustrative cases are chosen here:

CASE I.

The first case was a tentative one made with the intention of studying the possibility of reactions, and the vaccine was combined with the use of the sodium salicylate. It was thought that the salicylate might kill the active poisons and the vaccines strengthen the resistance of the natural forces.

The child was a girl aged 9 years, who fourteen days after tonsillotomy developed chorea, morbus cordis, nodules, and purpura. At first salicylate and sodium bicarbonate were given, 10 grains of the salicylate three times a day, increased later to 15 grains every four hours; then 25 million of the diplococcus vaccine were given on October 19th, then 50 million on October 28th, 50 million on November 4th, and 50 million on November 11th.

No reaction of any kind was noted, and this treatment was not persisted in. Eventually a fair recovery resulted in which no remedy apparently seemed to take any active part.

CASE II.

The next case, one of rheumatic chorea, was given six doses, rising from 1 to 32 million, and then, no reaction occurring and the condition improving, it was discontinued. Four weeks later, during convalescence, an attack of acute pericarditis occurred.

CASE III.

The third was a delicate girl of 6½ years with a four weeks' history, and was one of those unsatisfactory cases in which there was no pyrexia, but endocarditis with a rapid and irregular heart and with subcutaneous nodules. By the cautious use of a vaccine it seemed reasonable to suppose that an increased resistance might be obtained, but I am of opinion now that in the present state of our knowledge too large a dose was given; 10 million of a stock vaccine were given on August 24th and 10 million on the 29th. No reaction occurring, 25 million were given on September 4th. The following day the temperature rose for the first time, pericarditis was detected, and death occurred fourteen days later.

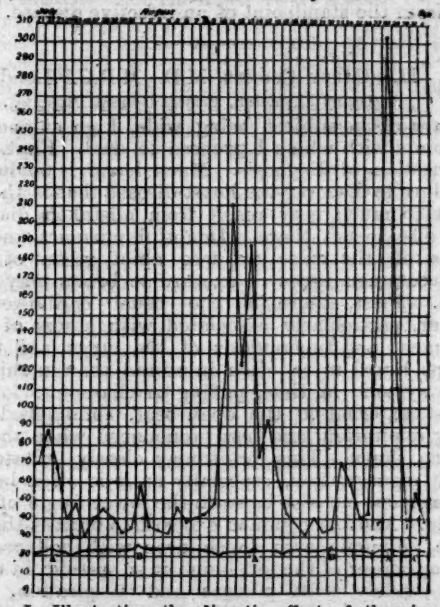

CHART I.—Illustrating the diuretic effect of theocin ,sodium acetate in arterio-sclerosis in an adult. A, Theocin sodium acetate, gr. x; B, tincture of digitalis gr. vi; C, theocin gr. x & inf. digitalis gr. v.

The necropsy showed general carditis; three of the cardiac valves were involved, and there was much pericarditis. I do not suppose the vaccine caused the pericarditis, for I believed that to be present from the first, on account of the persistently rapid and irregular heart. The only deduction I would draw is that this treatment, if not actually harmful, was certainly of no curative value in the case, which illustrates one of our great difficulties in the determination of whether or not rheumatic heart disease is in an active or passive stage.

CASE IV.

The next case was in reality one of an earlier date, and, whereas in the preceding one possible harm seemed to result from the treatment, so here it seemed clear that good was derived.

A child of 8 years had been suffering for four weeks from her first attack of rheumatism, and was admitted with arthritis, fever, endocarditis, and nodules. Ten grains of sodium salicylate were given every four hours, and increased later to 20 grains. In spite of this, more nodules appeared, and four weeks later pericarditis developed. After eight weeks of irregular fever, reaching to 101° F. at the maximum, all salicylates were discontinued, and 10 c.cm. of antirheumatic serum was given with 1 million of a vaccine. The vaccine was repeated three days later, and then five days later the temperature fell to normal for the first time, and remained normal for the rest of the illness. The nodules disappeared. One more dose of vaccine was given three weeks later, and eventually a fair recovery followed, the child leaving after a stay of four months in the hospital.

It appeared here that the fever and other bad symptoms which had baffled us for so many weeks had been affected favourably, just as in the preceding case the fever and pericarditis seemed to light up as a direct sequence of the treatment.

CASE V.

The last case illustrates the difficulties there must be in interpreting our results.

A girl, aged 12 years, on March 23rd suffered from dyspnœa and pain in the chest, on April 3 from pain in the joints, and on the 6th from chorea. She was admitted with pericarditis, endocarditis, and chorea. There had been recurrent sore throats and two previous attacks of chorea and one of rheumatic fever. She was a delicate child, and very ill, and although at first the symptoms quieted down, the temperature after a while began to rise again.

Then in this case a vaccine called "rheumatic phylacogen" was given in 1 c.cm. doses for eight days in succession, but signs of pericarditis reappearing, and the child not seeming so well, it was stopped, and cod-liver oil and malt substituted. The temperature then fell and there was general improvement. The impression I gained was that the vaccine had aroused fresh activity, or at least was not suiting the case, as the child appeared more ill. The temperature, however, now kept down and remained down for five weeks, although the heart was always excited. At the end of five weeks, without any obvious reason, the temperature rose again and pericarditis reappeared, this time more decidedly than in the first relapse. Sodium salicylate brought the temperature down again, and there was once more improvement, but still an excited action of the heart which made one chary of believing that the disease was really under control. This case is still under observation.

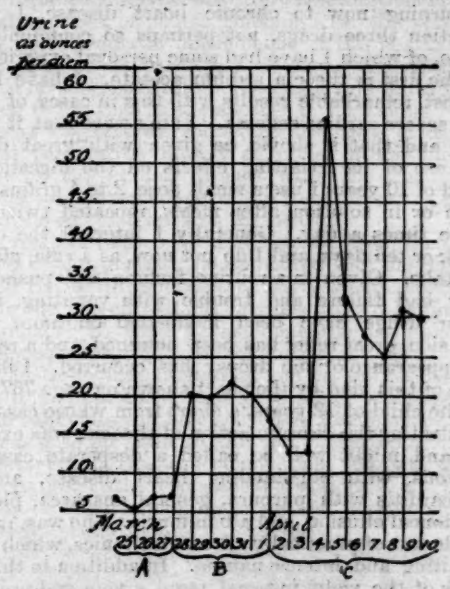

CHART. II—Illustrating the diuretic effect of theocin in a case of severe morbus cordis in a child aged 12 years. A, Digitalis ℥v every four hours; B, digitalis ℥iv intramuscularly; C, theocin gr. ii every four hours.

It has been said, I believe, that this vaccine is contra indicated in active heart disease, but is of value in arthritis. I need hardly say that with the views I hold upon rheumatism I cannot believe, if there is any specific action in such a vaccine at all, that it can be without effect in rheumatic heart disease, and if there are dangers in its use, these must be possible to avoid by a careful study of dosage. For my part, if brilliant results are going to be reported of its value in rheumatic arthritis, and if its contraindication in rheumatic heart disease is maintained, I shall be very slow in accepting their interpretation.

Let me repeat once more that I have touched upon these cases with the sole intent of emphasizing the difficulty there is in investigations of this nature and the need for patient and careful observation. I am not expressing any opinion upon the value or otherwise of such methods, because I believe we are not yet in a position to express such an opinion.

Pneumococcal heart disease in childhood is a very different condition from the rheumatic; at least I believe I am correct in so saying, although here again it is open to question as to whether we may not underrate its occurrence and possibly mistake such cases sometimes for acute rheumatc carditis. Pyopericardium, the most important lesion the pneumococcus produces in the heart, is most frequent under 4 years of age, and is, owing to the rarity of pericardial friction, most difficult of diagnosis, and at

this early age almost always fatal. Later in childhood surgical measures have proved successful, but there seems but little opening for preventive measures in this condition, which is usually associated with empyema or pneumonia, although we all recognize the importance of draining the empyema as a step in prevention. Are tuberculous heart affections more frequent than we believe? is another point of interest. The most remarkable group of these cases in childhood are those in which an adherent pericardium, strangling the heart, and associated with recurrent pleurisy and sometimes peritonitis, produces the syndrome known as multiple serositis, a condition which necessitates repeated paracentesis of the abdomen, and which has, in my experience, always ended in a tuberculous meningitis. The chief point that I would emphasize about the heart affections in diphtheria is the encouraging results we obtain if we take extreme care of children in the convalescent stage. It is the overlooked cases of this disease that develop paralytic symptoms, which are not promptly recognized, and as a result may end in disaster. Paralysis of the diaphragm is the final development in most of these cases. The enormous epidemic of measles that has spread over the country during the last year will, I hope, enable some of the speakers to add to our knowledge of its effect upon the heart.

Turning now to chronic heart disease, I will only mention three drugs, not perhaps so commonly used as some, of which I have had some personal experience.

The first is theocin sodium acetate. I have had some almost remarkable results with this in cases of obstinate and severe cardiac oedema. I am aware that it is uncertain and that it should be given with great discretion, because of its irritating effects on the digestion. In a child of 10 years I use a small dose, 2 to 4 grains in tablet form or in solution, after meals, repeated twice or even three times a day. Generally I intermit the drug in a week or ten days, and I do not now, as a rule, give it with digitalis. Given in a routine fashion and pushed, I have only had failure and trouble with vomiting, but when other drugs have been ineffectual on more than one occasion, great relief has been obtained, and a remarkable disappearance of the dropsy has occurred. I illustrate a case of this kind by the chart shown on page 787.

The child of 12 years, a chart from whose case I show, illustrating the diuretic action of theocin, was exceedingly ill, and might well be called a desperate case—highly nervous, with old-standing heart disease, and recent pericarditis with purpura, general anasarca, pleural and peritoneal effusion, and albuminuria. She was, in addition intolerant of practically all cardiac tonics, which produced vomiting and intense nausea. In addition to this, thrombosis of the right internal jugular vein and probably the right subclavian occurred while she was in the hospital. In spite of these difficulties profuse diuresis occurred with theocin, and with it a rapid disappearance of the dropsy. From that date improvement occurred, and although I do not pretend that she was anything more than a cardiac invalid, she became bright and happy, and as a result of medical treatment, with all its human limitations, I have no hesitation in saying it was a most brilliant one. This is not the only grave case in which I have had good results where other methods have failed, and I look upon this drug—for the use of which I am indebted to a paper by Dr. Harry Campbell—as an addition to our resources in chronic heart disease with dropsy and diminished renal output, both in childhood and adult life.

Anasarcin, a mixture of *Oxydendron arboreum*, *Sambucus canadinensis*, and *Urginea scilla*, has not been so effective in my hands, although in one case of severe cardiac dropsy it certainly suited the child well and gave assistance. I have used the tablet form, giving one three times a day, and have not had ill effects from them, but have had disappointment in the really difficult cases.

Camphor I have used in ½-grain doses in sterilized olive oil for intramuscular injection in acute heart failure, but I still prefer strychnine for this purpose.

Others will doubtless give us their experience upon these and other drugs in the treatment of heart disease, and I will now conclude by recapitulating the chief points of my remarks upon the prevention of heart disease.

1. The great frequency and importance of rheumatic heart disease, and its establishment as a cardiac infection, encourage us to make serious efforts for the prevention of rheumatism.

2. The greater frequency of the disease among the poor leads us to think that preventive measures will meet with some degree of success.

3. A valuable though simple precaution would be the printing by our important hospitals of a small leaflet with hints to the parents of rheumatic children as to the special dangers to be avoided and precautions to be taken.

4. A similar process of elementary education of school masters and mistresses of the large schools in the dangers of rheumatism would be an additional help.

5. The removal of diseased tonsils by enucleation in the rheumatic, and a more thorough study of the influence of unhealthy conditions of the throat and naso-pharynx—a procedure which would include also attention to the teeth—suggest themselves as further indications.

6. Modification of some of our convalescent homes, which could be associated primarily with the large hospitals, for special care of children recovering from acute rheumatic carditis and chorea. Such modification would include skilled nurses and medical supervision.

7. Lastly, for my own part, I think the time has now come when the house-incidence and local incidence of acute rheumatism might be once more investigated, for up to the present this has not been undertaken on a large scale from the standpoint of an infective disease.

II.—CAREY COOMBS, M.D., M.R.C.P.Lond.,
Assistant Physician, Bristol General Hospital.

THE area of the subject being wide, I go at once to the two points with which I propose to deal. First, there is the question of diagnosis. Much harm is no doubt done by failure to discover the heart disease that is there; but almost so much may result from mistaken diagnosis of heart disease not there. Doubtful murmurs and irregularities of the pulse are two chief rocks of offence. Three common types of exocardiac bruits may be mentioned. First, there is the usual cardio-respiratory murmur, particularly associated with states of nervous excitement and tuberculosis of the lungs, and therefore perhaps heard more often in adults than in children; it is late systolic in time, puffing in character, loudest at or just external to the apex beat, diminished or lost during expiration, and less pronounced when the patient is lying down. This bruit may closely imitate that of mitral regurgitation, especially as it is often heard not only in front but also beneath the lower angle of the left scapula. Another common exocardiac bruit is that heard at the pulmonic area in children with collapse of the anterior border of the left lung; it is systolic in time and varies widely with posture and respiration. I have more than once known this murmur suggest the existence of a developmental fault of the pulmonary artery. A third class of exocardiac murmur deserving of special mention is the systolic-diastolic venous hum heard in young children, normal and ill-nourished alike, immediately below the sterno-clavicular joints. When this sound is so loud as to be audible as far down as the aortic and pulmonic cartilages it may imitate the diastolic bruit of aortic regurgitation; the difficulty is, however, cleared up when it is found that the murmur is loudest at the root of the neck, continuous as a rule from systole into diastole, increased by retraction of the head, and diminished when the patient lies down.

As for the irregular pulse of childhood, it is so extraordinarily common that this alone should raise suspicions as to its importance. Friberger, indeed, says that the pulse was not absolutely regular in a single one of over 300 childen between 5 and 14 examined with the polygraph. The irregularity was very marked in 12 per cent. In a few there were auricular extrasystoles; apart from these there were no examples of arrhythmia that might own an organic origin.

Compare this with a series of children with organic heart disease. For some years I have been looking out for organic forms of arrhythmia in connexion with rheumatic carditis, a search which has included the application of the polygraph or electrocardiograph to nearly 200 such cases, about half of them children, and a general review of a good many more. The pickings of this quest, so far as childhood is concerned, may be

summed up as follows: Two cases of transitory heart-block, one of which my friend Dr. C. E. K. Herapath kindly brought to my notice, two or three cases of total irregularity, and less than half a dozen examples of extra-systolic arrhythmia.

On the one hand, then, arrhythmia is very often met with even in normal children; on the other, organic heart disease rarely causes irregularities of the pulse. This discrepancy is readily enough explained; it is arrhythmia of the sinus or supracardiac type, which has nothing whatever to do with cardiac disease, that is so common in children. The milder degrees of this irregularity are easy enough to recognize; sometimes, however, the pulse becomes so disorderly that a polygraphic tracing is necessary to reveal its meaning. In one instance the sinus arrhythmia was complicated by rather frequent extra-systoles, and it was impossible without a tracing to be sure that one was not dealing with an example of total irregularity. With the help of the polygraph, however, it is always possible to make sure. It may therefore be stated as an axiom that irregularity of the pulse in a child furnishes no support to a diagnosis of organic heart disease, except where graphic analysis has proved the irregularity to conform to one of the types commonly associated with organic disease.

The other matter on which I should like to provoke discussion is the outlook in rheumatic heart disease, especially in relation to our future plan of campaign. Dr. Poynton has already given a lead in this direction, so that it will, perhaps, suffice if I indicate briefly what appear to me to be the fundamental facts in the pathology of the disease.

First, rheumatism is a streptococcal infection. There are some who still doubt this; but recent work is bringing more and more evidence to its support.

Secondly, the infective agent enters the body in many cases, if not in all, by the lymphoid tissues of the nose and throat. I hope we are to hear more of this from Dr. Branson, so I will add no more to the bare statement.

Thirdly, its attack upon the heart is executed through arterial channels, and is delivered simultaneously upon all parts of the heart wall. The myocardium is injured in every case, and the mitral valves in practically all cases; the aortic and tricuspid valves suffer sometimes, and the pericardium is infected in the majority of instances. The microscopic character of the inflammatory foci found in the myocardium as well as in other tissues attacked by rheumatic infection shows that the organisms enter through the arterioles; for it is these structures, with the capillaries and lymph channels, that suffer primarily, and furnish a first and highly important line of defence in the shape of endothelial reaction. Experimental rheumatic infection, to the value of which Dr. Poynton has alluded, supports both these contentions—the simultaneous infection of all parts of the heart, and the endovascular beginning of the lesions.

Fourthly, the progress of the infection is not steady; judging from clinical and histological data, it consists of a series of active phases separated by periods of absolute quiescence. Each "active phase" is a complete attack in itself; the lesions arising in its course have the same predominantly vascular character, however slight the symptoms may have been. In other words, the histological picture of a mild recurrence differs only in degree and not in kind from that of a severe attack; and in each the conclusion that it is impossible to escape is that the micro-organisms have been borne into the cardiac wall through its coronary supply. It appears, then, that each attack and recurrence of active carditis bears marks of its arrival in the heart from without through the arterial channels.

Fifthly, these active phases occur so close together, at any rate in childhood, that it is difficult to suppose that each attack represents reinfection of the body from without. It seems far more probable that the streptococci are resident within the body for long periods, though only entering the circulation at intervals. For many reasons I believe that this extracirculatory resting-place is to be found, in many cases at any rate, in the naso-pharyngeal wall, and particularly in the tonsils.

Sixthly, it is in its tenacity rather than in its virulence that the chief danger of the rheumatic infection lies. Clinically the great majority of attacks display a definite leaning towards recovery. Histologically, also, the mildness of the infection is apparent in two ways: such degenerative changes as are to be seen in the myocardial and other specialized cells are rarely intense, while the inflammatory reaction is predominantly endothelial and fibroblastic, with only a moderate importation of leucocytes, showing that the first and second lines of defence are adequate to suppress the infection in most instances. The fact that the organisms barely persist in the infected tissues points in the same direction.

Seventhly, the heart is a muscle, and it is only by crippling its muscular functions that disease can overcome it. Rheumatic infection delivers its attack on the myocardium in a double way: there is its direct and immediate onslaught by which it attempts to poison the myocardium, and there is its less direct but more insidious device of eventually overworking the muscle by injuring the valves. Now, while the muscular effects of acute carditis are for the most part transitory and disposed towards recovery, its valvular results are permanent. Almost as soon as organisms enter the depths of the valve, a fibroblastic reaction occurs which inflicts irreparable injury. As for the pericardial lesions, their intrinsic importance seems to me to have been exaggerated; effusion scarcely ever occurs in rheumatic carditis, and adhesions, however widespread and dense, would have little influence on the myocardial functions were the muscular cells themselves healthy. Obliteration of the pericardial sac does, of course, coincide with the severest grades of post-rheumatic disablement of the heart; and in like manner acute carditis, with signs of general inflammation of the pericardium, does as a rule prove more threatening to life than in the absence of such signs. But in both cases I believe we should regard these evidences of general pericarditis merely as proof of an unusual saturation of the cardiac tissues with the rheumatic streptococci, and not as conveying in themselves any great menace to the efficient work of the heart.

Both in relation to forecast and control, then, there are two aspects of the disease, the immediate and the remote. First, what risk of direct defeat of the cardiac muscle is involved in the present attack, and how may it be limited and controlled? We shall, I hope, hear from Dr. Reginald Miller some account of his valuable investigations into the scope of the salicylate treatment, and my only remark is this, that it is improbable that anything of more specific value than salicylate will be discovered. The *Streptococcus rheumaticus* is so far akin to the common streptococci of the alimentary tract that it does not seem likely to set up any very characteristic biochemical reactions in the body, such as can be taken advantage of in the development of an absolutely specific plan of treatment.

The second aspect of the disease—the probability of permanent crippling of the heart by sclerosis of its valves—is perhaps the more important of the two; the majority of hearts escape immediate annihilation by the attack itself, but a much smaller proportion remains immune from the later valvular lesions. I should very much like to hear an estimate, founded on actual figures, of the percentage of cases of cardiac rheumatism surviving beyond childhood in whom valvular sclerosis fails to develop.

What can be done to prevent its development? As we have seen, recurrent infections of the valvular tissues, beginning deep and spreading towards the endothelial surface, are responsible for sclerosis of the valves; these infections occur during childhood at intervals of weeks or months, the periods of quiescence lengthening as the patient passes into adolescence and adult life; and it is probable that even during the quiet intervals the organisms are still within the body, though outside the circulation, most likely lying latent in the tonsils. At what step in this process can we expect our attack to be successful?

First, it is of no use to expect much from the treatment of the valve after organisms have entered it; the damage is, so to speak, instantaneous and irreparable. Cicatricial tissue cannot be unmade; its formation must be prevented. Neither can the infection be wholly annihilated during its transit from the point of entrance to the cardiac tissues; the available evidence suggests that this journey is accomplished too quickly to offer much hope of so successful an attack. More may be expected, however, from attempts to eradicate the disease by removal of

tonsils and adenoids. This is a matter that must be further investigated. My own experience of tonsillotomy by guillotine in rheumatic children has not been encouraging; but probably the newer methods of enucleation will be more profitable, and it would be very interesting to watch the fate of such patients for several years after this operation has been performed.

Last of all, the possibility of raising the patient's resistance has to be considered. For reasons already stated, it is unlikely that this will be accomplished by specific means. The factors predisposing to rheumatic infection have scarcely been studied as yet. Such inquiries as have been made lend support to the belief that climatic and economic agencies play a part, and if this is so, means must be found for counteracting these influences. We come, therefore, to the conclusion that rheumatic infection of the heart must be prevented. Before this can become possible further research is needed, and it is surely not too much to ask a nation which spends money on the investigation of tuberculosis to spare a little for acquiring a better understanding of a disease so widespread and calamitous in its results as is cardiac rheumatism.

DISCUSSION.

Dr. W. C. CHAFFEY (Brighton) put forward "Some Records of Heart Disease, with special reference to a Family History of Phthisis or Rheumatism." The principal reason for doing so, he said, was to point out the large proportion of instances in which phthisis occurred in near relatives, the degree of frequency being the same as for acute rheumatism. It might be rather difficult to explain the fact offhand, but he felt special interest in it himself, as he had surmised that the solution was to be found in the association of valvular disease with changes of an obstructive nature in the lymph glandular system related thereto. Many years ago he had endeavoured to point out that the distribution of tubercle in an organ was dependent on some retardation of the lymph current from some cause. If any such conditions should subsist in the heart or great vessels, it might be inferred that these were subjected to predisposing influences which might be quite as important, from an etiological point of view, as the factor which appeared last in the series of events, and which was usually designated the cause. The speaker shaved the belief that disease, generally speaking, was the result of many antecedent circumstances, though there might be one in particular which was habitually associated with this or that disease. Those who had made an intimate study of acute rheumatic manifestations would probably agree that the specific microbe alone would not invariably produce rheumatic phenomena in the human subject. In his *System of Logic* John Stuart Mill wrote: "The cause may not be simple, it may consist of an assemblage of conditions." And, again, George Eliot, an associate of scientists, grasped the same principle which was expressed in the following passage from one of her works: "In natural science I have understood there is nothing petty to the mind that has a large vision of relations and to which every single object suggests a vast sum of conditions." Signs of heart trouble often followed closely on attacks of one or more of the infectious diseases, such as measles, whooping-cough, or scarlatina. In particular it would be found that a large proportion had suffered from severe attacks of whooping-cough. In this connexion it might be remarked that whooping-cough occurring in early infancy and previous to measles was usually severe in type. In such circumstances the lymph glands in the chest enlarged very considerably, and if the patient became infected with tubercle, it would be found that this developed first in the glands themselves or in the lymph channels in their immediate vicinity. The suggestion that the speaker had to make was that the same condition predisposed the patient to the specific microbe of acute rheumatism, especially in those subjects who possessed an inherited tendency to phthisis or acute rheumatism, both of which occurred in near relatives in 40 per cent. of the instances quoted below. He agreed that overstrain was often an important factor in the production of organic heart disease, especially when accompanied by much dilatation or by aortic trouble. With regard to the treatment of such cases, he had usually

An Analysis of 37 Cases of Heart Disease in Children, with special reference to a Family History of Phthisis or Rheumatism.

Ms. = Measles; P. = Phthisis; R. = Rheumatism; R.F. = Rheumatic fever; S.F. = Scarlet fever; Wh.C. = Whooping-cough.

No. of Case.	Age.	Sex.	Complaint.	No. of Years since Contracted—			No. of Months Suffered from R.	Family History of Phthisis and Rheumatism.
				Ms.	Wh.C.	S.F.		
1	9½	F.	Mitral disease and pericarditis	5	4½	—	9	F. strong, no R., no P.; m. strong, no P.; her f. and sister had R.F.
2	11	M.	Mitral disease	7	10	—	10	F. died with P.; m. strong, no R., no P.
3	6½	F.	Mitral disease and pericarditis	—	4½	3	12	F. and m. strong, no R. and no P., but f.'s f. had R.F.
4	11	F.	Mitral disease and pneumonia	7	7	7	24	F. no R. and no P.; m. has chr. R., and her two sisters had R.F. several times.
5	11	F.	Mitral and aortic disease	10½	10	5½	6	F. no R. and no P.; m. ? has P., and her two sisters died young with P.
6	12	F.	Mitral disease	10	10	10	3	F. had R.F.; m. no R., no P.
7	5½	F.	Mitral disease and pericarditis	2	5	—	1	F. and m. strong, no R. and no P.
8	6½	M.	Mitral disease	6	—	—	3	F. strong; m. ? has P., and her sister.
9	10	F.	Mitral disease	5	—	—	2½	F. and m. strong, no R.
10	9	F.	Mitral disease	5	—	—	7	F.'s two brothers and one sister died with P.; m. had R.F. 18 years ago.
11	11	F.	Mitral disease	6	4	2½	18	F. died with P., no R.; m. and her m. had R.F.
12	9½	F.	Mitral disease	7½	7½	6	1 wk.	F. and m. strong, no P.
13	11½	M.	Mitral disease	—	—	—	1 wk.	F. died of bronchitis, ? P.; m. died of R. ht. disease, no P.
14	7	M.	Mitral disease	2	1	—	36	F. strong, no P.; m. strong, her f. died with P., and her f. and m. had R.F.
15	7½	M.	Mitral and aortic disease and pericarditis	3½	7	—	3	F. strong, no R., no P.; m. weakly, had R.F., no P.
16	11	F.	Mitral disease and pericarditis	4½	—	—	—	F. strong, no P.; m. died with P. 10 years ago, no R.
17	11	F.	Mitral disease	4	10	—	2	F. strong, no R., no P.; m. not strong, no R.
18	6	M.	Mitral disease and pericarditis	2	1½	—	2	F. strong, no R., no P.; m. not strong, no R., no P.
19	8	F.	Mitral disease	2	7½	—	3 days	F. not strong, ? P., no R.; m. not strong, no P., no R.
20	9	M.	Mitral disease	4	2	—	—	F. strong, no R. no P.; m. not strong, no R., no P.
21	8½	F.	Mitral disease	6½	6	—	—	F. strong, no R., no P.; m. not strong, no R., no P.
22	10	F.	Mitral disease	3	—	—	1 wk.	F. has P.; and his f. and m. died with P., no R.; m. strong, no R., no P.
23	8	M.	Mitral disease and chorea	6½	—	—	2	F. and m. strong; f.'s m. has chorea; f.'s sister had R.F.; and f.'s m. and one sister died with P.
24	7½	F.	Mitral disease	3½	3	—	1	F. and m. strong, no R., no P.
25	9	M.	Mitral disease	—	—	—	14 days	F. and m. strong, no R., no P.
26	7	F.	Mitral disease and chorea	3½	—	—	24	F. and m. strong, no P.; m.'s m. had R.F.
27	7	M.	Mitral disease	2	6½	—	2	F. and m. strong, no P.
28	11	F.	Mitral disease	9	8½	6	—	F. and m. not strong; f.'s f. and m.'s brother died with P.
29	9	F.	Mitral disease	—	—	—	8	F. and m. strong, no R., no P.
30	11	M.	Mitral disease	8	10½	—	8	F. strong, no P.; m. not strong; her m.'s sisters and brothers died with P.
31	8	M.	Mitral disease	4	2	—	6	F. strong, no R. no P.; m. not strong; her m. had R.F.

No. of Case.	Age.	Sex.	Complaint.	No. of Years since Contracted—			No. of Months Suffered from R.	Family History of Phthisis and Rheumatism.
				Ms.	Wh.C.	S.F.		
32	7½	M.	Mitral and aortic disease	—	—	4	48	F. and m. not strong, R.; m.'s f. and some other members of her family died with P.
33	9½	F.	Mitral disease and pericarditis	5½	5	—	24	F. had R.F. twice; m. had R.F.
34	8	F.	Mitral disease	4	4	—	2	F. and m. strong, no R.; m.'s f. and m. and two sisters died with P.
35	10	F.	Mitral disease	6	—	—	72	F. strong, no R. or P.; m.'s brother died with R. heart disease.
36	4	M.	Mitral disease	—	—	—	2	F. died with P., no R.; m. has had P., no R.
37	12½	F.	Mitral disease	11	—	8	2	F. has R., no P.; m. had R.F.; her brother has P.; and her sister died with P.

Summary.—Phthisis occurred in near relatives in 40 per cent. of these cases; and acute rheumatism occurred in them with the same degree of frequency.

found quite satisfactory results follow the use of salicylates and alkalis combined with tincture of strophanthus, together with frequent blistering in the precordia and complete bodily and mental rest.

Dr. Mary C. MURDOCH (Hull) remarked on the subject of pericarditis that it was much more frequent in children than in adults, and very often it went unrecognized. It could be detected by watching the edges of the pericardium and noting the earliest roughening. It rarely went on to effusion, and should be treated early and vigorously by putting five or six leeches along the left border of the sternum and the intercostal spaces over the precordium. Blisters ought not to be used on account of the difficulty of auscultation and detecting the cardiac condition during the course of the disease. In endocarditis, children were generally cheerful and hopeful, but in pericarditis there was a look of fear and extreme anxiety rarely seen on a child's face in other conditions. Just as pleural effusions might be loculated, so might pericardial. In a case of pyopericardium, a boy 10 years old, under her care ten years ago, after resection of 2 in. of the third, fourth, and fifth ribs, and removal of 8 oz. of pus, the temperature still kept up, and a few days later about 1 pint of pus poured from the wound after an adhesion was broken down. The boy recovered and was well two years ago. A case of arterio-sclerosis in a boy 11 years old was mentioned; the arteries were large and thickened, like cords, with high tension, forcible pulse, frontal headache, and albuminuria. The father was alcoholic, tuberculous, and syphilitic, the mother gouty. The boy had had a severe attack of nephritis, followed by typhoid fever, six years before admission. This boy had several attacks of tonsillitis when in hospital, from which *Streptococcus rheumaticus* was obtained. As the speaker had found vaccine treatment useful in adult cases of rheumatism, she had recently used it in children in small doses, beginning with 1, 2, or 3 million streptococci, and going up to 25 million, but the cases were too recent to give results. The tonsils seemed to be so often the seat of entry of the streptococci, that it was advisable in every case of rheumatic carditis to enucleate the tonsils in the quiescent state, but never while the disease was still active. In her experience, aortic disease was rare in childhood. In seventeen years, out of many thousands of children, she had seen only about 12 cases of aortic disease.

Dr. REGINALD MILLER (London), alluding first to Dr. Chaffey's remarks on the double family history on rheumatism and tuberculosis in rheumatic cases, asked if, on examination of the brothers and sisters of his patients, he had noted any seeming antagonism between the two diseases in the same patient. To the speaker it seemed that in families rheumatism sometimes attacked some members and tuberculosis others; but very seldom was there evidence of active double infection. Similarly in *post-mortem* examinations on rheumatic children tuberculous lesions were often found, but they usually seemed to be small and completely healed, again suggesting an antagonism between the two infections. To turn to Dr. Poynton's and Dr. Coombs's papers, he only wished to deal with one point—namely, what principle might guide them in the use of salicylate in active rheumatic carditis. He did not want to deal with the question of dosage; he was not in agreement with much that had been written on the subject of large doses, but, setting this altogether aside, it seemed to him vital that they must get some principle and some explanation of the use of salicylate in carditis. In the first place, one considered the action of salicylate in rheumatic arthritis and could hardly account for the effect, one of the most certain in the whole field of therapeutics, except by supposing the drug to have a bactericidal effect, direct or indirect, upon the organism. Need they deny this in the case of rheumatic carditis? On the heart rheumatism produced three sets of changes: (1) Inflammatory changes, which, if salicylate were bactericidal in action, should be controlled by the drug; (2) toxic parenchymatous myocardial changes, which salicylate could only affect by cutting off the source of the toxin; (3) fibrotic healing changes, which salicylate would not touch at all. If this were understood it would seem that with salicylate they could not do a great deal to produce an immediate effect. If it were allowed that salicylate exercised a bactericidal action in rheumatic carditis it would have two limitations: First, that the symptoms of the carditis—symptoms and signs of dilatation—were due to toxic changes rather than to the inflammatory changes which were also present; they would therefore require the lapse of time before they improved, and salicylate could not set them immediately right. Secondly, it was in cases of severe heart disease that salicylate was particularly prone to produce troublesome vomiting. Within these limitations he submitted that salicylate diminished the activity of the rheumatic infection, whether the infection were in the heart or in the joint.

Dr. W. P. S. BRANSON (London) gave reasons for believing that the infection of rheumatism gains access to the blood stream as a rule by way of the upper air passages. He pointed out that though experimentally a pathogenic microbe might be found capable of traversing an intact mucous membrane, and of subsequently exciting a constitutional infection without causing a local lesion at the site of entry, still in practice this process must be very rare, since organisms destined to produce a constitutional infection must gain access to the circulation in considerable numbers before they could become established in that hostile fluid. He believed that a local focus or base of operations was a necessary prelude to the advent of a generalized infection; it was well recognized in most of the infections with which they were intimately acquainted—for instance, syphilis, typhoid fever, and septic infections—and might reasonably be assumed in the case of rheumatic fever. Where was this focus to be looked for in the case of rheumatic fever? It was a commonplace that tonsillitis was perhaps the commonest prelude of rheumatism, as it was of scarlet fever, the only other disease at all commonly attended by lesions indistinguishable from those of rheumatic fever. He thought they were entitled *a priori* to suspect the tonsils as the point of entry. He had made investigation in a series of 75 cases of Sydenham's chorea, and found that 21 per cent. of them had already been operated upon for tonsils and adenoids, 65 per cent. of them had enlarged tonsils or enlarged tonsillar glands, and some 88 per cent. of them had obvious disease of nose, pharynx, or naso-pharynx. He believed that enucleation of the tonsils in the case of rheumatic children was a rational procedure, and hopeful as regards prevention of recurrent rheumatism and its heart affections.

Dr. A. E. NAISH (Sheffield), referring to Dr. Poynton's case of auricular extrasystole following convulsions, noted the possible connexion of this with the experimental work of Dr. Goodman Levy, in which stimulation of nerves under low chloroform percentages produced multiple tachycardias due to extrasystoles. He pointed out the need for further heart examination of infants with convulsions. He laid great stress on the importance of keeping rheumatic children warm. Relapse in cases of carditis

when sent to cold convalescent homes had been noticed in several of his cases. He commented on the fact that in Dr. Poynton's most successful case of vaccine treatment antirheumatic serum was used with the vaccine, and asked if this suggested that there might be a field for treatment with Besredka's sensitized vaccine.

The PRESIDENT spoke of the importance of house-contagion and contact-contagion in rheumatic infection and its transference, a matter of great importance in the prophylaxis of rheumatism. He pointed out that the poor were much more liable to rheumatism than the rich, although enlargement of the tonsils and adenoids were seen quite as commonly among the rich as among the poor. This difference he attributed to the greater exposure of the poor to chills and damp. Tonsillotomy he thought a most disappointing operation. Tonsillectomy, though more dangerous, certainly gave better immediate results. Irregular action of the heart he believed to be very generally negligible in children, and he commented on the rarity with which rheumatic pericarditis was complicated with pericardial effusion.

Dr. CAREY COOMBS, in reply to Dr. Chaffey, said that a history of tuberculosis would seem probable in rheumatic children if they considered how important a fact poverty played in predisposing to both infections. Whether there was any more direct connexion would have to be worked out, for it seemed likely to be a very profitable line of investigation. In reply to Dr. Murdoch, he said that in a series of autopsies on cases of rheumatic carditis, pericaditis was discovered in about two-thirds. Collections of fluid exceeding 4 oz. in quantity were very few—not more than half a dozen. He regarded rheumatic pericarditis as a feature of rheumatic carditis, and not as a disease in itself. Viewing it in this light, he looked upon clinical evidences of present or past pericarditis as proof that the heart was or had been visited by a large dose of the infective agent. He had been struck by the much greater incidence of aortic valvular disease in boys than in girls; of boys with rheumatic carditis, about twice as large a percentage exhibited evidences of aortic disease as in girls. In his experience the diastolic bruit was often heard only over a very small area low down on the left margin of the sternum; the fact that it was aortic in origin was in many cases corroborated only by the discovery of capillary pulsation. Dr. Miller had insisted upon the primary importance of parenchymatous as contrasted with interstitial lesions in the myocardium in acute cardiac rheumatism. This was borne out by an examination of physical signs; dilatation, referable to parenchymatous injuries, was practically constant, whereas evidences of focal damage, such as heart-block and extrasystoles, were comparatively infrequent. He must confess himself a believer in the reasonable use of salicylate; as Dr. Millier had said, their disappointments had been largely due to their over-sanguine expectations. Dr. Branson's advocacy of tonsillar enucleation was very encouraging, and he felt that they ought to have, as soon as possible, some account of a series of cases in which this had been practised, with details as to subsequent rheumatic histories. The President had pointed out the influence of poverty as a predisposing agent, and with this he cordially agreed. He thought enucleation of tonsils likely to be of value if by this means they might hope to remove from the body streptococci lying latent there.

THE SURGERY OF CHILDHOOD:

A PLEA FOR THE MORE EXTENSIVE USE OF THE OUT-PATIENT DEPARTMENT FOR OPERATIONS IN CHILDREN.

By JAMES H. NICOLL, M.B.,

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IN a paper read at the Annual Meeting of the British Medical Association in Belfast,[1] founded on an experience of some 9,000 operations performed during the preceding ten years in the out-patient department of the Royal Hospital for Sick Children, Glasgow, I advocated the relegating to the out-patient operating theatre of a much larger proportion of the surgical cases than is customarily sent there, and, in particular, pleaded that "in children under 2 years of age there are few operations indeed which cannot be as advantageously carried out in the out-patient department as in the wards," with great resulting gain to the hospital's accommodation and efficiency.

Notwithstanding much adverse criticism, my opinion has been only strengthened by further experience; and that experience leads me to express, in the present paper, the view that the age limit as stated above is too low. The age limit for out-patient operating is largely fixed by one factor in the case—namely, the portability of the patient. That will necessarily, in any given case, depend on the distance of the patient's home, the strength of the parent or guardian, and the size of the patient for his age. Children up to the age of 5 or 6 can be, as a rule, easily carried.

Up to the present date I have performed, in the Children's Hospital, in the Western Infirmary, and in private practice, considerably over 20,000 operations in out-patient children. In a city such as Glasgow these have naturally included a considerable proportion of cases of tuberculosis of bones, joints, and glands. The list, however, includes, in greater or lesser number, a wide range of affections. The paper above referred to gives the actual comparative numbers of certain of them for a decade (1899 to 1908 inclusive), and, as that decade is a fairly representative one, no useful purpose would be served by burdening this paper with a very lengthy statistical analysis. My present purpose will be served by indicating that the list includes operations for hernia, hydrocele, talipes, spina bifida and cephalocele, harelip and cleft palate, mastoid disease, hypospadias, epispadias and extroversion of bladder, imperforate rectum, pyloric stenosis, vesical calculus, birth-fracture of skull, undescended testicle, ganglion, prolapsus recti, web-fingers, dermoids, cicatricial deformities, intestinal obstruction, ununited and malunited fracture, and numerous less common affections. Certain series of the cases have been at different times published as bearing on special subjects, and, in connexion with spina bifida, hydrocephalus, hernia of the ovary, pyloric stenosis, ligature of the jugular, birth-fracture of skull, harelip and cleft palate, etc., will be found in the BRITISH MEDICAL JOURNAL, *Annals of Surgery*, *Glasgow Medical Journal*, *Edinburgh Medical Journal*, and the transactions of various societies.

In infants and young children I have found the results of surgical operations quite as good in the out-patient department as in the wards, and in the case of young infants—and I say it deliberately—considerably better; and my main object in presenting this paper is to put forward a plea for the reorganization of our children's hospitals.

A modern hospital for children properly organized should give a considerably larger return of work done per guinea charitably subscribed than can be obtained in a hospital for adults. Further, it should give a larger return than is being furnished by any of our children's hospitals at present. To attain the maximum of work a children's hospital should, on its surgical side, comprise the three following departments:

1. The in-patient department of theatre and wards. This should be reserved for (*a*) children beyond the portable age. Under the working conditions which I am outlining there would remain in this category many of the osteotomies for genu valgum and varum, many of the excisions and erasions of joints, fractures of the lower limb, and many of the operations for appendicitis, peritonitis, intestinal obstruction, empyema, etc.; but there would largely disappear from it operations for hernia, hydrocele, cleft palate, congenital talipes, and other affections, which would be treated, as I treat them now, in the out-patient department in infancy or early childhood. (*b*) Children whose homes are at a distance. (*c*) Cases in which extended diagnostic observation is necessary; and (*d*) cases in which special after-treatment, such as saline infusion for shock or the care of a tracheotomy tube or colostomy opening, is necessary.

2. A hostel for sucklings and nursing mothers, either in the hospital or hard by. For years I have had such accommodation near the Glasgow Children's Hospital, and speak not without experience when I say that the lack of it in our hospitals in general results in the loss of many infantile lives annually. The new Children's Hospital nearing completion in Glasgow contains such accommodation, and one can only attribute its absence in children's hospitals generally to the absence, or comparative fewness, of women on the governing boards. No woman requires

to be told that to add sudden weaning to the ordeal of a surgical illness necessitating operation is heavily to weight the scales against recovery.

3. The out-patient department. This should consist of the operating theatre, undressing room, recovery room, and room for changing dressings.

In Glasgow there is in the out-patient department a staff of nurses under the direction of a sister, with, in addition, a house-surgeon. The members of this staff visit patients at their homes. Very rarely, however, is an operation case visited. The patients are brought back by their parents or guardians for inspection, and ultimately for dressing, on the date given them. In any specially serious case three addressed post-cards are given the parent on the day of operation, with instructions to report daily and to return on the fourth day, and with the intimation that in the event of any emergency arising a message will bring one of the staff at once. Our nursing staff visits are almost exclusively to cases of morbus coxae and spinal caries lying at home on extension, to cases of psoas abscess and of extensive burns. The immunity from accident which we have enjoyed is largely due, there can be little doubt, to the thoroughness in detail which the exigencies of out-patient operating engender. In such a triviality as a circumcision even, a carelessly tied vessel may produce alarm and even danger miles from hospital, while in hospital it means merely the summoning of the house-surgeon from his room.

The class of cases treated in the out-patient department is indicated in the list given above, and my experience leaves me no alternative to the opinion that in children under 5 or 6 years of age there are few operations which cannot be carried out as advantageously to the child in the out-patient department as in the wards, and at a tithe of the cost to the hospital. Under such a system as I indicate a hospital's financial resources are not wasted, its turnover of work is largely increased, its beds are reserved for cases proper to them—that is, cases which cannot be dealt with outside hospitals—the waiting list is kept down, and many young children are cured of their ailments within a couple of weeks of their first attendance, instead of having to wait months or even years for admission.

To get the best results in out-patient work, each surgeon should have at his disposal, in the wards or in the out-patient department, one emergency bed or cot, the term of occupancy being strictly limited to four days, a date which covers that of the surgeon's next day on duty. After that, if the patient is still not in a condition to go home with safety, his case should be transferred to the in-patient service.

Emergencies *will* arise in operations, and in the case, for example, of a torn jugular in the peri-adenitic confines of a mass of caseating cervical glands, to send the patient to a distant home is not fair to the patient, while to send him into the wards is equally unfair to him, to the out-patient surgeon, and to the in-patient surgeon who is ignorant of the position of matters in the operation area.

Working both in a general hospital for adults and in a children's hospital, I have long been conscious of three effects which experience in the latter is increasingly producing in the work in the former:

(*a*) The routine operative treatment of surgical affections in infants in the out-patient department is largely removing these affections, not only from the wards of the children's hospitals, but also from the lists of the general hospitals. The elimination of all hernias present in infancy from the total number of those at present treated in adolescence and adult life is an instance in point.

(*b*) The practice of not preparing the part for operation until the patient is under anaesthetics on the table receives full support from the results of operations in a children's out-patient clinic where preliminary preparation is impracticable. Further, the experience of operating through skin merely washed with soap and water, followed by methylated spirit in young children, tends to the attempt to simplify the process of preparation in adults.

(*c*) Experience of abdominal section and herniotomy in out-patient children, who are, of course, not kept recumbent or only partially and intermittently so, will speedily convince any surgeon that many of our adult patients are still kept needlessly long in bed after similar operations.

REFERENCE.

[1] The Surgery of Infancy, BRITISH MEDICAL JOURNAL, September 13th, 1909.

CARDIAC EFFICIENCY FROM THE SCHOOL POINT OF VIEW.

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Need for Practical Standards of Cardiac Efficiency during School Life.

THE increasing demand for individual strenuousness, not only in school studies but also in school games, exercises, and athletics, brings out clearly the fact that a considerable proportion of adolescent boys and girls are, by reason of circulatory inefficiency, not capable of working to the standards that are usually set, however moderate these standards may appear to be. In part this failure is due to the fact that the natural physiological variation to be found in all organs is to be found in the circulatory system, and in part to the fact that several forms of disease occurring during infancy and early childhood set a severe handicap upon the circulatory system, and therefore impair the power of sustaining prolonged strain or supporting prolonged attention in any direction at a later period of life. The compulsory medical examination of children attending public elementary schools brings out certain facts in regard to the prevalence of both mild and severe disorders of circulation, though the problems of the circulation that occur during primary education are comparatively simple compared with the problems of the circulation that occur during secondary education, for this involves a much higher level of effort, and takes place during adolescence.

The standards of cardiac deficiency based on cardiac abnormality are quite inadequate and often misleading. The established methods of physical examination of the chest give us, it is true, certain limited information to the existence of previous disabling disease. This information is often misleading, and standards based solely upon it are often deceptive. They do not sufficiently put us on our guard against the temporary cardiac and circulatory debility following acute febrile conditions, such as influenza, tonsillitis; they do not tell us of damage done to the vasomotor apparatus by such diseases as diphtheria and severe scarlatina; nor do they guide us much in deciding upon the degrees of efficiency of the heart muscle to withstand strenuous exertion.

As for the rough and ready standards current in school practice, the general method of admission to school life, at least in day schools, allows all boys to enter school games and sports unless certified as physically unfit. The finding out of weaklings is left to the chance course of events. The same applies to compulsory gymnasium drill or attendance at swimming baths. Dr. Clement Dukes long ago (Second International Congress on School Hygiene) wrote: "No physician can certify that the boy can run, although he may sometimes be able to say that he cannot."

The only sufficient school test is the response of the heart and circulation to increased activity. The real test of cardiac efficiency is capacity to respond to effort demanded. It is to be measured by control over pulse-rate and vascular tension. Bodily muscular effort, particularly when sustained, involves the attainment and the maintenance of a certain degree of arterial tension and a certain pulse-rate in harmony with respiration. The rapidly increasing bodily power that takes place during adolescence is characterized by a fall in the pulse-rate and a rise in arterial tension. The following summary of a paper by Dr. James H. MacPurdy, though only based on 27 cases, clearly shows this[1]:

The Rise of the Blood Pressure during Adolescence.

No. of Cases.	Age.	Heart-rate.		Systolic.		Diastolic.		Height.	Weight.
		Horizontal.	Standing.	Horizontal.	Standing.	Horizontal.	Standing.		
2	10-11	73.25	82.1	103.1	105.0	63.1	64.15	139.8	35.8
3	11-12	80.6	84.0	103.2	102.9	67.0	66.5	143.0	35.3
9	12-13	73.4	81.9	101.2	102.9	64.3	67.4	144.9	34.6
6	13-14	76.0	84.8	106.0	104.0	64.9	65.3	147.1	37.3
7	14	77.7	87.5	102.4	106.0	61.4	68.0	150.4	38.7

The very irregularity of these results is suggestive. For the numbers are so limited that the exceptional cases divert the average in the direction of showing that early maturity and good growth seem to be associated with early rise of vascular tension, while delayed growth, especially of weight, seems to be associated with delayed rise of vascular tension—in fact, the onset of adolescence is largely a matter of the onset of rise of vascular tension.

There may be feeble circulation apart from recognizable heart weakness. Many children suffer from blueness, and even cyanosis of cheeks, ear-tips, and extremities generally, which is greatly aggravated by the effect of cold, but is not caused by it. When this condition is due to congenital pulmonary valve inefficiency the children are often very well nourished. In other cases the condition seems to be due to some vasomotor irregularity. There is a lack of arterial tension, and therefore prolonged effort is often impossible. The condition is slightly noticeable early in childhood, and has been remarked[2] during school medical inspection at the age of 5. It becomes much more common during adolescence when the pulse tension is normally rising.

All observers concur in the opinion that the effect of previous physical training on cardiac efficiency is of enormous importance, but it is only those in actual contact with school athletics, etc., who realize that there is also great danger that many delicate children may be prevented from reaching the full degree of strength possible for them because they are forbidden, often by medical certificate, from participating in any form of school activity whatever, without any reference to the severity or mildness of that school activity.

The principal school activities which call for cardiac efficiency are: (1) Swedish exercises, apparatus work in gymnasium; (2) running, jumping, and general school games, cricket, lacrosse, football, etc.; (3) swimming.

1. *Swedish Exercises.*

These, as generally practised in schools, involve very little strain on the circulation, and, though they are capable of being carried to a considerable degree of severity under special conditions, such excess is not a general rule. The exercises centre round respiratory and free limb movements. It may be said that almost any boy who is fit to attend school is also fit to attend the usual Swedish exercises, and yet medical certificates are constantly sent to school debarring boys "from all gymnastic work," which includes, or is mainly composed of, Swedish drill, to the great detriment of many who would be benefited by moderate exercise.

The principal reason for which boys really need excusing from Swedish exercise are recent acute febrile diseases, recent mild appendicitis, rupture, recent fracture, and I have seen several cases of mild Graves's disease among adolescent boys. Boys suffering from nervous irregularities of the heart, and from most forms of ordinary valvular disease, are often greatly benefited by moderate Swedish drill.

Apparatus work is of all grades, starting from the very mild exercises of inclined ladder or backboard with handle bars, the ribstall or wall-bars which involves brief momentary body suspension, knotted rope or plain rope for climbing, the rows of rings for muscling up on one arm and throwing the suspended body from one rope ring to another, work of horse-vaulting, leaping, etc., and extending to the severe exercise of "chinning," or slowly raising the body on the horizontal bar till the chin is on a level with the hands, and also to circling the bar in its various forms.

2. *Running, Jumping, etc.*

Any healthy child of 9 to 10 should be able to run or scamper for 100 yards, yet there are quite a large number who cannot run this distance. No harm can be done, except in the case of recent cardiac illness, but any failure should be noted for further observation. Boys under 13 should run 100 yards in about 14 seconds without serious strain.

Delicate Children.—As for the effect of unregulated exercise on delicate children, some interesting illustrations of the importance of watching it were given in the London County Council Report of Medical Officer for Schools, 1908. "In the case of the excursions to the Isle of Wight, 51 boys were examined by Dr. Rivière, 2 being excluded on account of well-marked mitral disease of the heart. In addition 7 boys showed some cardiac dilatation. This was slight, except in one case, A., a boy of nervous, restless type, whose heart was considerably dilated. He was advised not to go, but on his own doctor's permission he was sent, with restrictions. Another boy, B., appeared to have some chronic kidney trouble with hypertrophy in addition to dilatation. A third, C., showed some incoordination of movement, suggesting the early onset of chorea; his heart was of poor tone, but hardly dilated; he was sent, with restrictions. The others had just sufficient dilatation to be noteworthy. Two days after the boys returned from their journey; great improvement in health appeared in all who had been previously noted as sound, and no cardiac dilatation appeared in any of the 7 noted with dilatation; previously 3 showed a distinct increase. Their general health was either worse or not improved. The average sound boys, then, got much benefit from their expedition and no heart dilatation resulted, whereas of the 7 boys with weak and somewhat overdone hearts 3 were distinctly worse, 1 was not improved, and 1 was probably saved by having been restricted; the only 2 who were not worse were boys who had been very anaemic. It is evident that with boys at these ages prolonged exercise must be avoided if they show any signs of being fagged, and that a considerable period of rest must be allowed in each period of twelve hours."

Standards at Present in Use.—The following standards of excellence are set at the Manchester Grammar School athletics, and boys receive special credit for their performance if they reach them. It is not advisable to have time limit for longer than 220 yards for boys under 14, as strain under this age is inadvisable. Half a mile sprinting under 16 is allowed, with a time limit of 2 min. 40 sec. It is a high level, and involves strain, though a trot at a lower speed involves little strain, and may be quite beneficial for most boys. The school time limit for one mile race (open) is 5 min. 35 sec. The length of time it takes for the pulse-rate to regain normal speed after any exercise should be noted in any doubtful case.

The following standards of physical efficiency for jumping now in use at this school for commendation are fairly good levels for city boys:

High jump, under 12 ...	... 3 ft. 3 in.
14 ...	... 3 ft. 9 in.
16 ...	... 4 ft. 3 in.
Over 16 ...	... 4 ft. 7 in.
Broad jump, under 15 ...	... 13 ft. 6 in.
Between 15 and 16...	... 15 ft.

3. *Swimming.*

The strain that swimming exerts on the circulation is somewhat different, for there are here three factors to be considered:

1. The effort put forth by a good swimmer is much less acute than the effort put forth in ordinary racing and sports. This is owing to the buoyancy of the water, though in the case of a poor swimmer there is such excessive and useless expenditure of energy that the exercise may be violently acute.

2. There is a much greater demand upon heat production, owing to the rapid radiation and conduction of heat from the body that occurs in the liquid as distinguished from the atmospheric medium.

3. The natural reflex contraction of the calibre of the arteries and capillaries in response to the lowered temperature of the water causes the arterial blood pressure to rise, and in many persons causes the fingers to go white and numb. There is no real disadvantage if the immersion is only short, and if the vascular constriction gives way rapidly on leaving the water when vigorous bodily movement is encouraged. If it does not give way speedily, bathing should be prohibited. Under any circumstances, where it occurs, the use of the cold bath should be very much restricted.

Temperature of the Cold Swimming Bath.—Swimmers who remain for some time in fresh water generally ask for a temperature of 70 to 74° F. In the case of public baths, especially in poor-class districts, it is often advisable to have it even warmer than this. It is a current saying among bath attendants, the poorer the district the warmer must be the water of the public bath if children are to

be encouraged to attend. It is inadvisable for the temperature of an ordinary swimming bath for boys to be below 70°, for this causes the use of the bath to be greatly restricted to the most robust, and causes a large number of abstentions among those specially needing to learn swimming. Open-air fresh-water swimming is much more fatiguing, and requires very close supervision, particularly in the case of competitive racing. The water is much colder. The standard set for commendation is the swimming along a course of about 800 yards in 18 min. 30 sec. No boys under 15 and no boys who are excused gymnasium for medical reasons are allowed to enter except by express medical permission. Boats should be available for ready help in the case of any boys getting fatigued, when full knowledge of each individual boy is not obtainable.

REFERENCES.
[1] *American Physical Education Review.* [2] See Dr. Priestly's Reports to the Staffordshire Educational Authorities, 1909-10-11.

DISCUSSION ON THE CHOICE OF METHODS IN DEALING WITH PARALYTIC DEFORMITIES IN CHILDREN.

OPENING PAPERS.

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THE subject is an exceedingly large one, but is of increasing interest for surgeons. I may begin by reminding you that deformity in paralysed patients may be due: (1) To the weight of the body acting upon joints which give way, because the power of the muscles which support them has been weakened or is absent, as in infantile paralysis, spina bifida, or compression paraplegia; (2) to contraction and contracture of unopposed healthy muscles; or (3) to spasm in certain muscles, as in spastic paraplegia.

The greatest amount of deformity is produced where there is complete paralysis of one group of muscles only, the opposing group being perfectly healthy. The more paralysis there is in a limb, the less deformity there often is. The more universally distributed the paralysis, the less deformity there will be. In compression paraplegia deformity is often slight. Here it is necessary to cure the paralysis, and I venture to assert that prolonged recumbency in a double Thomas's splint with head and feet extensions will cure every case of compression paraplegia.

Spastic paraplegia typically illustrates the extravagant deformity which may result from muscular spasm. It has been my custom to divide the tendo Achillis, cut out a piece of the hamstrings and of the adductor muscles, provide the patient with a walking instrument and a long night-shoe extending above the knee, and give him massage and exercises. This treatment I have found as a rule to be quite efficient. The child is enabled to walk with the joints of the limb in a normal position. The spasm in the muscles has a tendency to subside and the act of walking to become more natural and more automatic. The gait improves, more control is gained over the leg muscles, and instrumental support is ultimately discarded. This treatment, it is true, may extend over a long period of time, but we must remember that the disease is nearly always accompanied by more or less maldevelopment of the frontal lobes, and that the after-treatment of these children must of necessity be prolonged.

We shall no doubt learn much from the paper to be read by Professor Foerster, the inventor of the operation of section of the posterior nerve roots; but it will, I think, always be necessary to divide the tendons of those muscles which, owing to long-continued contraction, have become shrunken and shortened. Unless these shortened muscles are divided, the deformity cannot be overcome. It follows, therefore, in my opinion, that nerve section must in the majority of cases be supplemented by tenotomy or excision of the shortened contracted muscles, and that better results are likely to be obtained by posterior nerve root section when the cases are operated upon before the muscles have become cicatricially shortened.

Another group in any deformity is that which results from an injury to a motor nerve, whether by division, laceration, or compression. In these cases the nerve must be exposed, and, if found, divided; its ends must be freshened and reunited. The nerve may be paralysed by compression. I have several times in cases of ulnar paralysis found the ulnar nerve compressed by thickening of the bone filling up the ulnar groove as the result of an injury (separation of the epiphysis) to the lower end of the humerus. This new bone should be chiselled out and the groove re-established, and the pressure on the nerve removed. The ulnar nerve may also be compressed by a thickening on the inner side of the ulna as the result of a fracture. This thickening must also be chiselled away. I have several times performed both these operations, with complete recovery of the nerve, both as regards sensation and motion. In injuries about the knee, the external popliteal nerve may be so stretched by displacement backwards of the lower epiphysis of the femur as to cause paralysis of the extensor muscles of the foot, with consequent talipes equinus. I have several times chiselled off a portion of the posterior surface of the external condyle, and removed this source of pressure.

It is, however, as the result of infantile paralysis that the vast majority of paralytic deformities in children occur, and our remedies take the form of massage, exercises, fasciotomy, shortening tendons, lengthening tendons, transplanting tendons, fixing tendons (fasciadesis), and nerve grafting. I will briefly review some of these deformities, and briefly state the treatment which I have been accustomed to adopt.

In simple paralytic talipes equinus the tendo Achillis only is contracted. This must be divided. I always divide it subcutaneously. An extreme degree of contraction and shortening can thus be overcome. Open lengthening of the tendo Achillis is very rarely necessary. The deformity should only be partially corrected at the time of the operation. There is a danger that the equinus may be converted into a talipes calcaneus; therefore the section of the tendon should be an oblique one, the knife being entered at the side, passed through the tendon, and slid up, dividing the tendon into two flaps, the anterior half of the tendon being severed above, and the posterior half below. This ensures a much larger raw surface, and the danger of non-union and subsequent calcaneus is decreased. About a fortnight should be allowed to elapse before the tendon is fully stretched (the foot meanwhile resting in a Scarpa's shoe), and the position of the foot fully corrected. A right-angle tin night-shoe, with quadrant movement, should be applied every night. A walking instrument, with an uplifting toe-spring, should be worn by day. When the paralysis of the extensors is severe, and the contraction of the tendo Achillis very likely to relapse, tendon transplantation is called for. The tendon of the tibialis posticus or a portion of the tendo Achillis should be sutured to the extensor longus digitorum muscle.

In talipes equino-cavo-varus it is well to begin by curing the cavus and varus. The plantar fascia should be divided subcutaneously, each tight band of the fascia being divided separately, at several sittings if necessary. If the fascia is tight and thickened, it should be excised after elevating a triangular flap of skin and subcutaneous tissue whose base is towards the outside of the foot. The flap should be replaced and sutured at its apex. Where the foot is fat, and the circulation exceedingly feeble, excision of the plantar fascia by open operation is not advisable.

For the cure of the varus, subcutaneous division of the tibialis anticus and tibialis posticus and the internal lateral ligament sometimes suffices. In many cases, however, there is overgrowth of the head of the astragalus, owing to prolonged retention of the foot in the varus position. This overgrown head and neck of the astragalus should be removed by chisel through a vertical incision 1 in. in length over its head. Should the position of the foot not be perfectly corrigible at this stage of the proceedings, the anterior extremity of the os calcis should be removed by means of a cut directly over the dorsal surface of the calcaneo-cuboid joint. Should the varus be very extreme and the foot not yet perfectly replaceable, an incision may be made along the outer border of the foot, and, if necessary, a wedge of considerable size may be removed from the cuboid and the os calcis. In my opinion, no operation other than the above is ever necessary for the full correction of even the most severe paralytic equino-cavo-varus. I never excise the whole astragalus when the varus is corrected; then the tendo Achillis should be divided.

For the permanent cure of paralytic equino-cavo-varus during the period of growth and until the tendency to recurrence of the deformity has disappeared, it is absolutely essential that a night-shoe should be worn and that a walking instrument should be worn by day, with T-straps so adjusted as to correct either valgus or varus, and uplifting or depressing toe-springs adjusted to correct any tendency there may be in the tendo Achillis to contract or lengthen.

The peroneus longus should be divided and its distal end transplanted into the peroneus brevis, and the proximal end of the peroneus longus into the peroneus tertius. The peroneal tendons may be detached from their place behind the external condyle and dislocated forwards, so as to act as extensors, or half the tendon of the tendo Achillis may be passed round the outer border of the fibula and attached to the extensor longus digitorum tendon.

Neuroplasty may be performed; a flap from the anterior surface of the internal popliteal nerve should be dissected up and transplanted into the external popliteal nerve. Neuroplasty labours under the disadvantage that the results are often not manifested for twenty months. But it is the ideal operation; it acts on the disease at the site of the lesion; it brings about restoration of function. It is not always possible to be sure that power would not in due course have been restored by natural means alone; hence one hesitates to credit all the improvement to the operation of neuroplasty. The exact anatomy and distribution of the various bundles composing the main trunk of the various nerves have been worked out by the researches of Stoeffel, and the operation of neuroplasty thereby placed upon a much more certain foundation, so that the results obtained should show improvement in future. Stoeffel recommends that where only the peronei are paralysed the flap of the external popliteal nerve should be transplanted into the popliteal surface of the internal popliteal nerve.

For the treatment of paralytic talipes calcaneus the wearing of an obtuse angled tin night-shoe is essential, so as thoroughly to relax the tendo Achillis by night. A walking instrument by day, with a depressing toe-spring, is also essential for the same reason. Tenotomy of the extensors may be necessary. For mild cases this treatment is sufficient, but for more severe cases the peronei, if intact, should be transplanted into the tendo Achillis. The tendo Achillis may, by pleating or section, be shortened by the open operation if the nutrition of the leg is fairly good.

In extravagant degrees of talipes calcaneo-cavus the whole plantar fascia may be excised with advantage. A quadrilateral flap of skin and subcutaneous tissue should be turned back towards the heel, the fascia excised, and the quadrilateral flap replaced and sutured on each side. After excision of the fascia the foot should be stretched and the sole elongated. The flap of skin, therefore, when it is replaced, will not entirely cover the wound. The front part of the wound should be skin grafted. Nerve grafting of the distal portion of the popliteal nerve into the external popliteal nerve is indicated where the whole group of deep muscles of the calf is paralysed.

In cases of paralytic talipes valgus, the tibiales anticus and posticus are most frequently at fault, and the peronei tight. For very slight cases exercises and a boot with the heel prolonged and a valgus pad are sufficient. In more severe cases, an instrument with double irons to the knee, a valgus T-strap and a surgical boot, with a valgus spring night-shoe for night wear, are necessary. In more severe cases still, tendon transplantation must be performed. Into the paralysed tibialis anticus the peroneus brevis should be transplanted. Where the tibialis posticus is also paralysed the peroneus longus should be transplanted into the tibialis posticus, and the tibialis anticus should be attached to the tendon of the extensor longus digitorum. If the tibialis posticus alone is affected, the peroneus longus should be transplanted into it. Where the tendo Achillis is contracted the outer part of this tendon should be implanted into the tibialis posticus. There is no tendon grafting in the body which gives such good results as the implantation of the peronei into the tibiales posticus or anticus. Not only are the contracting peronei transferred from the outer side where they are deforming the foot, but even should volitional power not be restored, they at least act as tendons, drawing the tibialis posticus muscle tight and inverting the foot. In a few instances I have definitely seen inversion of the foot produced by voluntary contraction of the peronei muscles. After transplantation it seems curious that one peroneus which normally everts the foot should be made to act as an inverter. For this result re-education of the cortical centres is essential, but clinical experience has clearly demonstrated the fact that it is possible. I much prefer to transplant one tendon into another, rather than to stitch the tendon to the periosteum at certain parts of the foot, as advocated by Lange.

When the muscles of the front and the back of the leg are completely paralysed a flail ankle is the result. The patient has no power at all of moving the foot at the ankle-joint. With instrumental support such a patient can be made to walk, and the ankle can be kept in good position. It is astonishing how well in after-life a patient who has worn instruments, with the foot in good position, is able to walk even when he has no power in any muscle of the foot. Indeed, I have known a man who had no power in any single muscle below the pelvis yet walk quite well without support of any kind.

It is not until the walking instrument has been worn for some time, often for years, that one is enabled to say whether or no power is going to return to the paralysed muscles. When, however, it is deemed unlikely that power will return, and the foot remains flail at the ankle, arthrodesis should be performed. There are several incisions for this operation. The method of performing arthrodesis by means of a transverse incision has the objection that the anterior tibial artery is divided. I generally perform this operation by means of an incision along the anterior border of the tibia extending along the inner side of the foot. This incision cuts nothing except ligaments and subcutaneous tissue. It enables both the ankle and the astragalo-scaphoid joint to be opened and arthrodesed, and it also enables the paralytic extensor tendons to be sutured to the deep fascia of the front of the leg if thought advisable (fasciadesis).

It must be remembered that the astragalo-scaphoid joint is a ball-and-socket joint, and may allow excessive mobility of the foot, even after fixing the ankle-joint. Arthrodesis of the ankle gives exceedingly good results. It is important that the whole of the cartilage should be removed and the bony surfaces exposed and apposed. It is not necessary to wire the bones together. It is important that the foot should be kept immobilized in good position in plaster-of-Paris for at least four months. Bony ankylosis frequently results, and, so far as function is concerned, the result is usually perfect. In every case of flail ankle, therefore, arthrodesis is the operation to perform.

I now pass to the knee. The most common paralytic deformity met with at the knee-joint is one of flexion and valgus, owing to the frequency with which the biceps muscle remains sound, whilst the quadriceps and other hamstrings are weakened. Division of the biceps and the ilio-tibial band enables the knee to be straightened by means of splints. In paralytic cases the biceps should be divided, as a rule, by the subcutaneous method, although some care is essential in order not to divide the external popliteal nerve.

In other cases where the quadriceps is paralysed, and all the hamstrings have become contracted, it will be found impossible to extend the leg fully. The hamstrings must be divided and the knee gradually straightened by splinting. It is safer and more satisfactory to divide these muscles by the open method. When the leg is straight, a walking instrument with a cap over the knee and a ring catch at the knee should be given. When the patient has become accustomed to walking with a straight knee the ring catch should be loosened daily for an increasing length of time, or a Hessings splint case appliance with elastic traction at the knee should be fitted. As I have already stated regarding the foot, so with regard to the quadriceps; it is impossible to say when power will return to the quadriceps. I have many patients who had no power at all of extending the knee when they were first put into instruments, and who now can fully extend and hold the leg fully extended and horizontal. I have one patient who was in instruments for twelve years before he began to show the least signs of returning power in the quadriceps. During the past six years he has gradually developed a quadriceps which is as large as that on the sound leg, and he has discarded his

instruments. When, however, it is deemed hopeless to expect return of power in the quadriceps, and the hamstrings are cut, the biceps and the sartorius muscles should be transplanted into the quadriceps. The incision should be long enough to enable these muscles to act vertically, and their tendons should be long enough to be attached to the top of the patella. The muscles should be united by catgut, and no other material. I never bury silk. I once had to remove five pieces of thick silk which had been placed in a boy's leg nine months before, each piece resting in a circular ulcer which had been discharging for that length of time.

When there seems little prospect of returning power in the quadriceps, the anterior crural nerve may be cut high up, its end passed through to the back of the thigh, and inserted into the sciatic nerve.

Should the deformity at the knee-joint take the form of genu recurvatum, in slight cases an instrument with a back stop at the knee is all that is necessary. In severe cases the hamstrings should be shortened, and the knee should be kept continually flexed at night. It is important that genu recurvatum should at once be controlled. It tends rapidly to increase. Ten degrees of hyperextension are normal and enable a patient to stand without muscular effort at the knee. Where the knee is flail it should be arthrodesed. The knee should be put up absolutely straight, not flexed in the least degree. The cartilage should be freely removed so as to expose the bone. The bones need not be wired together. The patella should not be removed. The limb should be fixed in plaster-of-Paris for at least six months.

Paralysis about the hip-joint does not, as a rule, call for more active treatment than tenotomy and instrumental appliances. The muscle which is least often paralysed is the tensor vaginæ femoris; it is, therefore, the one most often contracted, causing the limb to be abducted. Subcutaneous tenotomy enables this deformity to be corrected. The adductors sometimes give great trouble, and these should be divided subcutaneously. In cases where they persistently contract and are unopposed by the glutei and other abductors their excision is advisable, but is rarely called for in infantile paralysis. Dislocation of the hip-joint from paralysis is a rare condition. Sometimes the head of the femur can be replaced and redislocated at the will of the patient. A leather splint case, moulded to fit the pelvis and thigh, and worn for some months, will prevent the involuntary dislocation of the hip. Should the paralysis be so extensive that no weight can be borne on the hip, and the hip easily dislocates, arthrodesis of the hip should be performed through an anterior incision. The leg should be put up in a position of slight abduction, and a plaster-of-Paris casing should be applied for at least three months.

When the infantile paralysis affects not only the leg but the trunk muscles, the spine becomes scoliotic. If a large portion of the flank muscles is affected the scoliosis is often extreme; it presents one long curve, usually convex towards the sound side. I know no operation which will remedy this defect. One has to rely upon corsets made of various materials, such as leather, celluloid, or poroplastic felt, or on instrumental spinal supports. A leather corset, with a dorso-lumbar flap cut out, will support the back, enable the patient to sit up, and walk with the trunk erect, and will prevent the deformity from getting worse. If expense is not an object, a plaster-of-Paris bed moulded accurately to the back should be given. In this appliance the patient can lie flat on his back whenever recumbent, whilst a band is so arranged that pressure on the convex lower ribs is exerted. The tendency in even extravagant cases is for a considerable degree of power to be regained in the abdominal and spinal muscles. Treatment by exercises and the above appliances gives encouraging results.

Let me now pass to the subject of paralysis of the upper extremity. Many of the more severe cases are hemiplegic in origin, due to instrumental delivery or prolonged labour. In severe cases of paralysis of the upper extremity, which is due to hemiplegia, there is more or less tendency to adduction of the arm, flexion of the elbow, pronation of the forearm, and flexion of the wrist. The flexion of the wrist, if extreme and of long standing, results in shortening of the flexors, which should be tenotomized subcutaneously. A splint case appliance, with elastic traction at the back of the wrist, should be applied to the forearm, in order to aid the wrist extensors. If there is complete paralysis of the posterior interosseous nerve, tendon transplantation must be resorted to, as follows:

The extensor carpi radialis longior tendon should be fixed to the extensor communis digitorum, and part of the tendon of the extensor carpi radialis brevior to the extensor longus pollicis. If these muscles are also paralysed, then the extensor tendons should be shortened by pleating, and the flexor carpi ulnaris and flexor carpi radialis tendons should be sutured to the extensors.

A portion of the median nerve just above the elbow may be elevated and united to the posterior interosseous nerve. The pronated position of the forearm is rendered constant owing to the fact that the pronator radii teres has become shortened. When the forearm is supinated, the pronator stands out as a firm, strong band. Until this is divided thoroughly by the open method even passive supination is impossible. After its division, however, the patient slowly regains or increases the power of supination. In many cases of hemiplegia the elbow has been so long retained in a flexed position that the biceps muscle has shortened. This should be subcutaneously divided. Should this contraction of the biceps be secondary to paralysis of the triceps, which has persisted, nerve grafting should be performed as follows:

At the shoulder the pectoralis major is often very much hypertrophied and shortened. At the back of the arm there is often a fascial or muscular band, passing across the posterior border of the axilla, which prevents a weakened deltoid muscle from elevating the shoulder. These should be divided by the open method. In many cases rotation of the humerus outwards is also prevented, owing to the fact that the arm has been rotated in and adducted for so long a time that the subscapularis muscle has become cicatricially shortened. This muscle can be distinctly felt in the axilla to stand out as a short thick band. The inability to rotate the arm externally prevents many movements from being performed. The hand cannot be passed to the back of the head; the hand cannot reach the mouth without the elbow being elevated, and so on.

The subscapularis muscle, where tight, should be divided through an anterior incision, as for ligature of the third part of the axillary artery.

In cases of extreme paralysis of the shoulder, due either to a wrench of the brachial plexus at birth, or infantile paralysis of all the muscles of the shoulder girdle, resulting in a paralytic dislocation or an extremely loose shoulder-joint, where there is very little prospect of recovery, there is no operation which gives such excellent results as that of arthrodesis of the shoulder-joint. I have usually performed this operation through an incision along the posterior part of the acromion, just below the spinal portion of the deltoid. An incision at this point enables the shoulder-joint to be opened with ease, and the cartilage of the head of the bone and the glenoid fossa thoroughly removed without damage either to the circumflex nerve or to other structures. It is difficult, in my experience, to obtain a bony ankylosis of the shoulder-joint. Though the ankylosis be not bony, yet the head of the humerus is firmly held in place by close fibrous adhesions, and no longer dislocates. I have many cases where, after this operation, the biceps, which was completely paralysed, has recovered power.

In a few instances the paralysis seems to affect the deltoid muscle only, with consequent loss of power of abduction of the arm, or of drawing the arm backwards or forwards. For the remedy of this condition I have on two occasions attempted to unite the trapezius to the deltoid muscle, removing the attachment of both of them to the spine of the scapula, but in both cases without a satisfactory result. The clavicular fibres of the pectoralis major muscle, if acting, may be detached from the clavicle and attached to the outer edge of the acromion. If the muscle becomes attached it will act as an abductor of the arm.

It is in cases of this class, however, that nerve grafting should be energetically tried. The circumflex nerve can be easily isolated, and the particular portion which goes to the deltoid easily demonstrated. A portion of the median, the musculo-spiral, or the subscapularis nerve may be transferred into the circumflex nerve; the best operation.

in my opinion, is to transplant the fibres of the musculo-spiral nerve which go to the middle head of the triceps. This part of the musculo-spiral nerve can easily be attached to the circumflex nerve.

Paralysis of the elbow is often associated with loss of power about the shoulder. After arthrodesis of the shoulder it is usual for power in the biceps to return. Should the biceps remain paralysed, and the muscles of the forearm be sound, a portion of the median nerve should be transplanted into the musculo-spiral. Should the triceps be sound, a portion of the triceps can be transplanted into the biceps. If the triceps only is paralysed, a portion of the median nerve may be transplanted into the ulnar side of the musculo-spiral nerve. In complete paralysis of the elbow and forearm, arthrodesis of the elbow should be performed, and the arm fixed at a right angle.

In conclusion, I wish to say a few words about deformity from shortening. It is unusual for a paralytic leg to be more than three inches shorter than the sound leg. The older the patient, the longer the paralysis has existed, the more extreme the paralysis on one side only, the more shortening there will be. It is the result partly of disuse and partly of atrophic disturbance, leading to maldevelopment. Up to the amount of two inches I think it is best counteracted by shortening the opposite heel, by lengthening the heel of the boot of the bad leg, and by a certain amount of cork within the boot of the bad leg. In larger amounts than two inches, and where the wearing of a cork boot is objected to, the advisability of dividing the sound femur obliquely and allowing it to shorten should be entertained. I do not approve of allowing the foot to acquire a talipes equinus, because when the patient grows up all sorts of troubles take place about the toes as the result of this position.

II.—Professor O. FOERSTER,

Breslau.

AMONG the paralytic deformities in children spastic paralysis plays a considerable rôle. One of the methods of treating this motor disturbance is the resection of the posterior spinal nerve roots. The danger attending this operation is not so great as generally supposed. I count up to the present 237 cases thus treated, with 20 deaths—that is to say, a mortality of 8.4 per cent. Among these, 200 were children, with 15 deaths, or a mortality of 7.5 per cent., and 138 of these children were cases of Little's disease, with 8 deaths, or a percentage of only 5. The more familiar we have become with this operation, the lower the rate of mortality. We have also met with some contraindications to the operation—for instance, the presence of epilepsy. As to the practical results: First of all we must bear in mind that root resection is not a curative operation, removing the disease itself, but a palliative operation directed against one symptom, the spasticity. Thus it is only justified in stationary or very slowly progressing diseases, such as Little's disease, spastic paraplegia or hemiplegia consequent on an acute encephalitis, some cases of hydrocephalus. On the other hand, a spastic paraplegia in tuberous or lobar sclerosis, infantile disseminated sclerosis, hereditary syphilis, many cases of hydrocephalus, Pott's disease, ought not to be subjected to the operation, for in these the disease tends to progress.

The operation I am here to describe to you is based upon the fact that in spastic paralysis the spastic symptoms are caused by the unimpeded afflux of sensory stimuli to the spinal grey matter consequent on the deficiency of the inhibitory fibres of the pyramidal tract. As you see, the resection of the posterior roots carrying these sensory stimuli removes the spastic symptoms. But there exists in every spastic paralysis besides the spasticity the paralysis proper, which is not ameliorated by the operation. This spasticity is due to a lesion of the pyramidal fibres that innervate the spastic muscles. A practical result can only be obtained if a certain amount of voluntary muscular activity is conserved, which fortunately happens in the majority of the cases of Little's disease; less so in many cases of encephalitis, hydrocephalus, and spastic paraplegia consequent on a disease of the spinal cord. Also in hemiplegia, the innervating fibres of the arm are more or less paralysed. Good results can only be obtained in the rare cases in which the spasticity is considerable, the paralysis proper slight. Among the 8 cases of spastic arm paralysis operated upon with my collaboration, I count only two satisfactory results (Professor Foerster illustrated this point with a series of lantern slides). Resection of the posterior roots is only applicable to the genuine spastic contractures consequent on a lesion of the pyramidal tract, since the spasticity is produced by the unimpeded sensory afflux to the spinal grey matter. All other muscular spasms, particularly mobile spasm, athetosis, etc., have no direct connexion with the posterior roots; they correspond to a motor stream, coming from the middle brain and carried by motor paths to the anterior horn of the spinal cord. In the fifteen cases of athetosis operated by resection of posterior roots the results have been discouraging, as was to be foreseen. I lay stress upon this fact, since, especially in infantile cerebral diseases, mobile spasm and genuine spasticity are not always distinctly differentiated. Often, indeed, they are intermixed with each other, and in such cases the root resection does some good. The root resection is to be made only in cases where, more or less, all muscles of the extremity are spastic—namely, in all severer cases of Little's disease, and other cerebral and spinal spastic paraplegias. In slighter cases the spasticity is restricted to single muscle groups—for example, to the plantar flexors of the foot, the flexors of the knee, the adductors of the hip. In such instances other methods are preferable because they are simpler, especially the operations on the muscles and tendons, or the partial resection of the motor nerves of the spastic muscle inaugurated by Spitzy. Also in infantile hemiplegia both the leg and the arm often show localized spasticity, the latter especially in the pronators, the flexors of the wrist, and the flexors of the elbow, in which cases operations upon the tendons and motor nerves suffice.

Turning now to the operation itself, I should like to deal especially with the question how many and which roots are to be excised. The main point is that as many roots as possible be resected, lest through the remaining roots the spinal grey matter be gradually recharged, and the spasticity return. For spastic paraplegia I therefore recommend resecting at least five roots. I have prepared a list showing the effect of the electric stimulation of each single root. The second sacral supplies the spastic plantar flexors of the foot, and must therefore be resected. The first sacral and fifth lumbar supply the spastic flexors of the knee, and must also be resected. The fourth, third, and second lumbar supply the extensors of the knee. One of these roots, the fourth lumbar, must be left unresected, in order that the extensor reflex, which is essential for the upright standing posture, be partially conserved; the third and second lumbar are resected, thereby relieving also the spasticity of the adductors supplied by those roots. Sometimes the electric stimulation of the fourth lumbar produces no knee extension, but knee flexion, and then extension of the knee is only produced by the third and second lumbar nerves. In such a case it would be wrong to resect these two roots, for this would completely destroy the extensor reflex and abolish the knee-jerk too. In such cases we resect the fourth and second lumbar posterior roots, and conserve the third. The after-treatment is of the greatest importance. Root resection removes only the genuine spastic contractures, but not the secondary shrivelling of the muscles and tendons. This must be eventually treated by tendo-plastic operations, especially on the Achilles tendon, on the adductors or the knee flexors. Besides this, for some muscular groups the resection of the peripheral motor nerves according to the method of Spitzy and Stoeffel is advisable—for instance, for the flexors of the toes, the pronator of the hand, the adductor of the thumb, and others. In walking the toes have the tendency to grasp the ground, which is very disturbing. Resection of the motor branch of the tibial nerve, corresponding to the flexor digitorum, completely removes this disturbance. After all this a particularly careful orthopaedic and gymnastic treatment must follow. The root resection is, so to say, only the preliminary; the main point is the exercise treatment, which again is utterly impossible without the root resection. By the operation the flexor reflex of the legs is not completely abolished.

This reflex, by which the legs are carried again and again into flexion, is terribly disturbing in every case of spastic paralysis. It even appears again in an increased form through any irritation of the limbs, such as forced movements, stretching of the sinews and muscles; and, lastly, operations upon the same. I show you a lantern slide that proves how, even after root resection, the legs are held in flexion. At the beginning the flexors are not spastic, but if the legs are left in this position for a longer time a certain spasticity of the flexors again ensues. The legs must be therefore carefully extended by means of removable casings. To effect the greatest possible degree of extension of the hip-joint I sometimes put the pelvis in a raised posture. The same point of view is applicable also to the adductors, inward rotators, and the plantar extensors of the foot. The legs must consequently be kept in abduction, outward rotation, and the feet in dorsal flexion by means of these supports, as the figure shows, and only be taken out for exercises. The exercises which are first to be taken into consideration are the movements of each leg singly and of each segment of the leg in the recumbent position.

Then follow the standing and walking exercises. The majority of the cases subjected to the root resection have never been able to stand or walk. Immediately after the root resection, too, the legs give way. First of all, the extension of the knee must be practised, often passively assisted by the hands of the teacher or by a special apparatus, a strip holding back the knees. Very often there exists a lateral deviation in the hip-joints; the projecting hip must be forced into position, which is obtained by a spur on the standing apparatus pressing against the hip. In the first standing exercises the patient is held up with both hands; later on two crutches are used, then two sticks, later on one stick, then the patient must stand alone with the legs apart, and at last he must stand with the feet close together.

In walking exercises we must consider first the supporting leg, and indeed, just as in standing, first the knee, easily giving way, must be extended, secondly the hip-joint must be straightened, thirdly the lateral deviation of the hip-joint; the leaning of the pelvis towards the moving leg must be prevented at the beginning by passive help, *later on without help*. As to the swinging leg it is sufficient at first to place it forward without any particular flexion of the leg, in wide abduction. By degrees, however, the flexion of the leg has to take place, at first by simply drawing it up. Gradually all details characteristic of the human gait must be carried out. Proceeding from the basis in which both legs touch the ground, first the heel of the hinder foot must be raised by plantar flexion, removing the weight of the body to the foremost leg. Then the flexion of the hind leg, the swinging leg, begins with a flexion of the lower part of the thigh backward towards the upper thigh. This movement must at the beginning always be passively assisted, later on it has to become free. Then all three joints of the leg must be bent at a maximum, with special regard to the drawing up of the front part of the foot and toes. Then the lower part of the thigh is extended forward, and lastly the leg is put on the ground in abduction and outward rotation. Walking is practised, as standing is, first with the help of the trainer's two hands, then with one hand and one stick, then with two sticks, next with one stick, finally alone. Also going upstairs must be practised in the same analytical way.

In applying the method I have just demonstrated, in which both operation and the analytical exercise treatment are equally important, I believe I have proved to you that several beneficial results are to be obtained. This brings me to the end of my paper, and I thank you, Mr. President and gentlemen, for your kind interest and attention.

[Professor Foerster's paper was illustrated by a series of sixty lantern slides, and by a great number of photographs, which were handed round to his audience.]

DISCUSSION.

Mr. ROBERT JONES (Liverpool) congratulated Professor Foerster on his excellent results, which he thought were enhanced by the great care in after-treatment which he practised. Mr. Jones thought the operation had only a limited field, and that equally excellent results could be obtained in most cases by simpler methods, such as exsection of the adductor origins or moving of the Achilles tendons, and a few weeks' wide abduction of the limbs. In more extreme cases, transplantation of the biceps into the patella and division of the tensor fasciae and anterior fibres of the gluteus medius, followed by prolonged education of muscles and in correct walking, resulted in very gratifying progress.

In regard to poliomyelitis it was necessary again to emphasize fundamental principles, otherwise operative and mechanical results would fail. It was necessary to make a distinction between muscles paralysed as a result of the destruction of nerve cells and muscles apparently paralysed from overstretching. The cord lesion having been recovered from, a muscle, if stretched for a sufficiently long period, would fail to act, while an overstretched muscle would regain its power if relieved from strain. To relieve this strain and to afford rest for paralysed muscles, it might be necessary to remove areas of skin and stitch the wound with the foot over-corrected. Before any transplantation was performed the stretched muscle should be relaxed for many months and the deformity corrected, so that the transplanted tendon was not overworked. Before transplanting it was necessary to compare carefully the strength of the tendon with the work required of it. It should rest where possible in a matrix of fat, should travel in as straight a line as possible, and be not handled by hand or forceps, excepting at its point of insertion, otherwise adhesions would occur. It should be inserted into bone, and should be protected mechanically for some time after its apparent recovery from erroneous deflection of body weight. Mr. Jones never arthrodesed the knee-joint in the young, and confined this operation to the ankle, mid-tarsal, and shoulder joints. He thought neuroplasty had so far failed to give the surgeon confidence.

Mr. LAMING EVANS (London) referred to four cases of spastic paraplegia, or Little's disease, for the relief of which he had performed the operation of posterior root section. These cases had been treated in conjunction with Dr. E. D. Macnamara at the Welbeck Street Hospital for Nervous Diseases. The dates of the operations were April and October, 1911, June, 1912, and June, 1913. In three cases the diminution of spasm was marked; in one case no permanent improvement had taken place. The operation he had performed consisted in the exposure of the conus medullaris and cauda equina by the removal of the laminae of the eleventh and twelfth dorsal and first lumbar vertebrae. In one case the lamina of the second lumbar vertebra was also removed. The dura mater was opened, and alternate roots on either side were divided, commencing with the second sacral; thus the second sacral and fifth and third lumbar were divided on one side, and the first sacral and fourth and second lumbar on the other. The dura mater was then closed with a continuous catgut suture, the muscles approximated with buried sutures, and the operation completed in one stage. In one case there was considerable leakage of cerebro-spinal fluid for several days after the operation. No permanent weakness of the spinal cord had to be recorded. From his experience of these cases he was satisfied that the operation of the division of posterior roots alone was insufficient for the cure of spastic paraplegia, and that the operation would always have to be accompanied by the most careful after-treatment directed to educate muscles and to prevent contractures. Further, in those cases where contractures had already occurred, the operations of tendon lengthening or tendon transference would be required in addition to the posterior root sections. Referring to Mr. Openshaw's paper, he said his experience led him to condemn the transplantation of the peronei tendons into the tendo Achillis in talipes calcaneus due to anterior poliomyelitis, as they lacked the necessary power to assume the function of their stronger neighbour. He had performed, for paralysis of the deltoid, both arthrodesis at the shoulder-joint and plaiting of the capsule, together with the insertion of artificial silk ligaments between the scapula and humerus, and

he thought that the latter operation gave better functional results.

Dr. W. J. Midelton (Bournemouth) said he had listened with great interest to the remarks of former speakers, who had treated the subject from the surgical point of view. Personally he had employed a method which might be considered medical. This was a form of counter-irritation. An instrument containing thirty-three needles was used for making light punctures in the skin; these were painted over with a mixture of croton oil and cantharides in almond oil. By a persevering use of this method a good deal of power could be restored to muscles without splints or special exercises, and apparently it would form a valuable preliminary to more radical measures. It assisted in greatly improving the general health. He mentioned the case of a boy who for six years had been regarded as hopelessly incurable from infantile paralysis, chiefly affecting the lower limbs. He crawled about on all fours, and was quite unable to use crutches. Now he could use crutches well, and many muscles had regained a considerable amount of power that previously were useless. He had gained weight and had greatly improved in general health. The muscles of the lower limbs had been carefully tested by the condenser method by Dr. Cumberbatch, and many showed the reaction of degeneration.

Miss Hultman (Bournemouth) described a simple method in dealing with poliomyelitis: (1) Consider each affected muscle as a separate entity, and deal with one at a time, be it contracted or hyperextended. (2) In working a muscle the limb is put in such a position as to allow the muscle to act in as far as possible a direct line, and then move the joint forward and backward. In the case of a contracted muscle begin by increasing the contracture, then use the rebound to stretch it, and by this means slowly increasing the range without forcing. The same method acts with a hyperextended muscle.

Mr. R. C. Elmslie (London) stated that certain principles must be adopted in the treatment of infantile paralysis. (1) The limb must be splinted from the first, usually in a standard position, varied occasionally in accordance with the distribution of the paralysis. (2) The limb must be put into use for its normal purpose as soon as possible; walking apparatus is for this purpose. (3) No operation should be carried out for two years. (4) Tendon transplantation is an operation for paralysis of limited extent; only certain transplantations are useful, these are gradually being defined. (5) Arthrodesis is an operation for extensive paralysis. Practically only arthrodesis of the ankle, tarsal joints, and shoulder are useful and advisable. Mr. Elmslie asked Professor Foerster if he could give any experience of the results of neuroplasty in infantile paralysis.

Professor Foerster, in reply, said that only those cases of spastic paralysis were to be subject to root resection in which other methods of treating spastic paralysis had been tried without any good result, which had been the case in the majority of cases he had recounted. Cases of athetosis must not be subjected to root resection. After the lapse of weeks and months the athetosis always returned. He was afraid it would be also in the case quoted by Mr. Laming Evans. Coming to details of his operation, he said that he picked up the roots when they perforated the dura mater, not when they issued from the spinal cord; at the latter point the single roots could not be differentiated from each other, which was so necessary, since in every case the extent of the spasticity varied. Neuroplastic operations had given him bad results in poliomyelitis.

Mr. Openshaw replied briefly to a few of the points raised by the discussion. In particular he commended Miss Hultman's method of gentle movement of paralytic muscles; he believed that the premature electric stimulation of such muscles not infrequently did harm by increasing the spasm.

DISCUSSION ON
THE DIAGNOSIS AND TREATMENT OF ACUTE ABDOMINAL INFLAMMATION IN CHILDREN.

OPENING PAPER.

By C. B. Lockwood, F.R.C.S.Eng.,
Consulting Surgeon to St. Bartholomew's Hospital, etc.

The diagnosis of acute abdominal inflammation in infants and children has difficulties of its own.* It has often to be based on clinical observations made in perplexing circumstances. Methods of scientific investigations are of little avail. Special clinical training and experience are called for in arriving at the judgement, which is so difficult; and in seizing the opportunity, which is so fleeting. In those of tender age an acute abdominal inflammation runs its course with startling swiftness. Its march is measured by hours, not by days.

In the acutest cases there are no premonitory symptoms. The attack begins suddenly and in the midst of health. The following are not unusual instances:

Acute Onset in the Midst of Health.

Case I.

A girl of 5 years went to bed apparently well. At 8 p.m. she vomited, and the abdomen became distended with prominent coils of intestine and complete obstruction. The whole abdomen seemed to be free from pain and not tender. In thirty-six hours the peritonitis was widespread, with much purulent fluid and flakes of lymph, and in forty hours the end came. The cause was never ascertained, but the vermiform appendix is said to have been normal.

The chances of recovery depended upon a prompt operation. No one who appreciated the significance of the intestinal obstruction would have waited. In such circumstances obstruction which cannot be overcome by test enemata is an indication for operation. Perhaps the absence of pain and tenderness might have helped to mislead.

On another occasion the significance of inflammatory obstruction was certainly overlooked for five days.

Case II.

A boy, aged 9 years, was taken suddenly ill on November 7th with abdominal pain, distension, vomiting, and obstruction. On November 12th laparotomy was performed for diffuse septic peritonitis, caused by a perforated and gangrenous appendix. Although nearly moribund when operated upon, the boy did not succumb for nearly forty-eight hours.

It betokens great tenacity of life for a boy of 9 to have resisted an acute septic abdominal inflammation for a week. Clearly, even if the cause of the obstruction had not been understood, nevertheless the mere presence of the obstruction should have told the urgent need for laparotomy; a test enema would have shown whether obstruction existed or not. Whatever its cause an intestinal obstruction is fatal.

Here is another example of sudden onset with additional signs of danger.

Case III.

A boy, aged 13, had been perfectly well until one evening, when he became violently sick, with pain in the right side of the abdomen. At this time the pulse was 92, and the temperature 101° F. Then a rigor occurred, and the temperature rose to 103° F. Fifteen hours after the first vomiting the area of acute peritonitis was considerable, and the abdomen had in it a quantity of turbid serum. The distal third of a long appendix was gangrenous.

The constitutional signs indicated an inflammation. The pain felt in the right side of the abdomen pointed to its site, and tenderness and rigidity were confirmatory. But the rigor was a danger signal of profound significance, and told the intensity and danger of the absorption from the inflamed and septic focus.

Rigors are not usual in children, but when they occur they point to a most dangerous, and probably streptococcic, infection.

Case IV.

A girl, aged 11 years, with an acutely inflamed appendix of the fetal type, had—at the beginning of the attack—severe rigors, vomiting and diarrhoea. The right colon and caecum, together with the intensely inflamed appendix, had retracted in a curious way towards the liver, and this made the operation somewhat difficult.

* The term "child" is hard to define. I have included only one boy aged 14; all the others are under that age.

When an acute abdominal inflammation begins with vomiting and diarrhoea the symptoms are sometimes attributed to ptomaine poisoning. This may lead to delay which might be avoided if the focus of acute inflammation were sought for. A focus of acute inflammation in the pelvis is apt to be overlooked.

CASE V.

The onset of an acute abdominal inflammation was sudden and violent in a boy aged 9. On March 29th the illness began with sudden and violent abdominal pains, a high temperature, and accelerated pulse. On the 31st all the symptoms subsided—the period of repose. Six days later an abscess with gas in it was opened in the right flank, and a perforated appendix removed from the outer side of the caecum and colon. This patient recovered, but with an extra long scar, but fortunately in a place where ventral hernias do not usually occur.

The sudden and violent onset clearly indicated the dangerous character of the attack. It is not unlikely that a non-appreciation of the meaning of "the period of reposo" led to the delay. The abscess, too, was situated in the flank, a place where it might easily have been overlooked. It is probable that an earlier operation would have resulted in a shorter and better incision. In another instance the course of events was almost exactly the same.

CASE VI.

A boy, aged 4, had a sudden and acute attack of appendicitis, with a temperature of 102° F., and a rapid pulse. Then there was a period of repose, after which the constitutional symptoms were again severe, the pulse having reached 136. The abdomen became much distended, with almost complete obstruction. A week after the onset there was a hard and very tender spot above and behind the anterior superior spine of the ilium. This abscess contained much foul-smelling pus, and a concretion. The vermiform appendix was not removed, but after many years has not given further trouble.

The abscess began at the time of the sudden and acute attack, but, being favourably situated, became localized, and, for a time, the constitutional symptoms subsided. Being in a somewhat unusual place, the existence of the abscess had not been suspected, hence the delay.

The usual history when the perforated appendix is to the outer side of the caecum and colon is illustrated by the foregoing and also by such cases as this:

CASE VII.

A delicate boy, aged 7, had a sudden and violent abdominal pain whilst out for a drive. He continued very ill, with a rapid pulse and high temperature, until at last a swelling was observed in the right flank where hitherto there had been tenderness and rigidity. This was an abscess, full of foul-smelling pus, and with a concretion in it. The child recovered, and has not had further trouble.

It is difficult to believe that the presence of this abscess would not have been detected before it began to bulge if the meaning of the tenderness and muscular rigidity, together with the constitutional symptoms, had been appreciated.

When the abscess forms in the flank, the consequences of delay may be of the gravest kind, although that situation is such a favourable one.

CASE VIII.

A girl, aged 5 years, had an attack of appendicitis, similar to those which have been described. It was clear that an abscess had formed in the right flank, but owing to the repugnance of the friends to operative procedure it was not opened for several days. After it had been opened, extensive sloughing and gangrene of the abdominal wall set in, and death ensued from septic absorption.

Absence of Premonitory Symptoms.

Infants and children are, of course, unable to give an account of their premonitory symptoms, but it is to be noted that sometimes they may behave in the most misleading way.

CASE IX.

An infant of 2½ years old ran about the nursery and played with the other children, until it suddenly collapsed. By that time the abdomen was the seat of extensive septic peritonitis, and had much pus in it. The infant died a few hours after it had ceased to run about and play.

It is difficult to say how such a calamity could have been averted. I have seen many instances of acute septic peritonitis in which the patient did not look at all ill.

The following is another instance in which the child behaved in a misleading way:

CASE X.

A girl, aged 6 years, did not seem well, but complained of no particular pain, and walked about the garden. Twenty-four hours later an acute retro-colic appendicular abscess of considerable size was opened and drained.

The child must have had this abscess whilst she was walking about the garden with her mother, who naturally could not have imagined how ill the child was. However, there was no delay after she had been seen by Dr. Hope Murray.

The attack of acute abdominal inflammation may have been preceded by premonitory symptoms which had been concealed by the child, for the minds of children move in mysterious ways.

CASE XI.

A little boy had an acute attack of appendicitis, but which subsided, so that appendicectomy was performed during quiescence. When interrogated after he had got well he confessed that he had had bad pains in his abdomen, which caused him to roll about the floor, but which had been concealed, he said, lest he should have been sent into the sick bay, and not allowed to play games.

Premonitory Symptoms not Recognized.

Premonitory symptoms may have occurred but their significance not been appreciated.

CASE XII.

A boy, aged 13, had had two attacks of appendicitis at intervals of six months. There had been some shivering during the last attack, which was said to have been a "bilious attack followed by gastro-enteritis." After this he was placed under observation, and his evening temperature ran up to about 100° F. An acutely inflamed appendix distended with pus was removed from the pelvis.

The relatives of the child were prepared to accept the diagnosis of "bilious attacks followed by gastro-enteritis," and did not, until warned, consider the illness to be dangerous. Had the abdomen been properly examined during the so-called "bilious attack," it is not to be doubted but that acute rectal tenderness would have been found. Inasmuch as the boy had been allowed to bathe with his schoolfellows he must have been in peril.

On the whole, a history of previous attacks is rather favourable than otherwise. An inflammation which has subsided is not of the most dangerous kind.

That the diagnosis of "bilious attacks" is to be received with extreme suspicion is shown by what happened to the only son of a medical friend.

CASE XIII.

The boy, aged 11½ years, was at school, and at 2 p.m., after dinner, vomited thrice, with moderate abdominal pain. After castor oil the bowels acted well, but he had further vomiting. The father, having heard his son had had a "bilious attack," at once fetched him home. Twenty-five and a half hours after the onset the boy's temperature was 100.3° F., and his pulse 90 to 120 and irregular. There was no tenderness in front of the abdomen except a very slight degree at McBurney's point. But there was great tenderness per rectum in the recto-vesical pouch. An acutely inflamed appendix was diagnosed, and inferred to be situated in the recto-vesical pouch. An appendix of the fetal type was pulled up out of the pelvis. It was intensely inflamed, with a swollen and gangrenous extremity. Recovery was speedy and uneventful.

Here, again, is a sudden onset without premonitory symptoms, and pointing to an acute and dangerous form of inflammation. The pulse was never known to have been irregular before the attack, and therefore its irregularity was a danger signal of great significance, for it indicated the absorption of a considerable dose of poison. An acutely inflamed appendix deep down in the pelvis does not reveal its presence by causing tenderness or rigidity in front of the abdomen. The tender spot is felt per rectum.

CASE XIV.

A rectal examination is known to have been omitted in the case of a boy, aged 10, who suffered from occasional attacks of abdominal pain. The recto-vesical pouch contained an inflamed appendix of the fetal type, with its extremity distended and its walls thinned out by a huge concretion.

Clearly a disaster was impending, and would have occurred had not a rectal examination been made.

The Pelvic Appendix and its Dangers.

The fetal type of appendix is common in children. I met with it eleven times in 25 consecutive cases. An appendix of the fetal type, and hanging down into the pelvis, is common in children with appendicitis. It is easy

to understand that when the caecum gradually merges into the appendix, like the junction of an elephant's trunk with its head, and when such an appendix hangs into the pelvis, the conditions are ideal for the accumulation of faeces in the appendix. Should the appendix fail to empty itself, the usual sequence of events ensues; concretions form; ulceration of the mucosa, similar to the stercoral ulcers of the large intestine, takes place; and, finally, bacterial invasion of the coats of the appendix, with all its evil consequences.

Since I have watched for the pelvic appendix of the fetal type when operating upon children, I have met with it so often that I have come to the conclusion that it is one of the chief anatomical predisposing causes of appendicitis.

In very young infants there is but a small chance of an acute pelvic inflammation becoming localized, and there is no deceptive period of repose.

Significance of Pain during Micturition and of Pus in the Urine.

Pain during micturition, or retention of urine, is of deep significance.

Case xv.

A female, aged 6 years, began one day to have acute pain on micturition. The temperature and the pulse ran up and an inflammatory swelling was felt per rectum. In about twenty-four hours Douglas's pouch contained a perforated appendix and a collection of pus with a concretion in it. The septic inflammation continued to spread and an acute toxaemia supervened, and was fatal within thirty-six hours.

Here there was no preventable delay. The significance of the pain during micturition was fully appreciated, and led at once to discovery of the pelvic inflammation, but the infection and the toxaemia were of the severest type. Thus, in the acute abdominal inflammations of children, pain during micturition, or retention of urine, is highly significant, and suggests a pelvic examination.

Acute pelvic inflammation may cause pus to appear in the urine.

Case xvi.

Another little girl, with an acute inflammation in Douglas's pouch caused by an inflamed pelvic appendix, had much pus in the urine. The pelvic position of the inflamed appendix had been diagnosed and she was put up in the Trendelenburg position for its removal, after which she recovered.

Here is another example of the danger of the pelvic appendix and of the rapid and continuous progress of an acute abdominal inflammation in one of tender years, and of the dangers of delay.

Case xvii.

In a female aged 7 the attack began with vomiting and constipation and pain in the right iliac region. On the third day the temperature was 102° F. and the pulse 130. A gangrenous appendix hung into the pelvis, and there was much pus throughout the lower part of the abdomen. The right ovary and Fallopian tube were much inflamed.

Whatever else might have been observed, the sudden and violent onset of this acute inflammation clearly indicated the intensity of it and the necessity for an operation long before the third day. In an almost identical case, which was under the care of my friend Ernest Bridges,[1] the dangers were recognized and an appendix with commencing gangrene was removed within seventeen hours of the beginning of the attack.

Dangers of the Period of Repose.

In older children an acute septic inflammation has a tendency to localize itself for a time, and this may be very deceptive.

Case xviii.

A boy, aged 9, began with an acute abdominal inflammation, which on the second and third day was thought to be subsiding. On the fourth vomiting occurred, the bowels ceased to act, the abdomen became distended, and the pulse ran up from 94 to 120. There was also retention of urine. Much thin, odourless pus was found throughout the lower part of the abdomen, and the pelvis had in it a gangrenous appendix. He died next day—the fifth after the onset—of a profound toxaemia.

After its onset, the acute pelvic inflammation had for a few hours localized itself in the recto-vesical pouch, with the accompanying brief period of repose. This had led to the belief that the attack was stationary or subsiding.

Constitutional Symptoms.

In estimating the severity of the abdominal inflammation, the pulse, the temperature, the respirations, and the blood count, are taken into consideration.

The Pulse.

The value of accurate and systematic observations of the pulse is shown by the following:

Case xix.

At 10 a.m. a boy, aged 11, was seen with acute tenderness at the right iliac fossa. He had gone to bed well the night before. The temperature was not raised, but Dr. J. W. Nunn found that the pulse-rate was 100. At 6 p.m. the pulse-rate was 110, and at 10 p.m. it was 125. He was excited, with flushed cheeks. There was still no elevation of temperature taken in the mouth. The vermiform appendix was intensely inflamed and wrapped up in omentum. The area of peritonitis was small, but had some purulent fluid about it. Recovery was quick and uneventful.

Taken with the acute localized abdominal tenderness, the progressive and rapid increase in the pulse-rate proved a reliable guide to the intensity of the infective inflammation.

It is not at all unusual to find the omentum adherent to an inflamed appendix, but the protection which this affords is exaggerated.

Case xx.

A boy, aged about 10, was suddenly seized with violent abdominal pain and vomiting; the temperature speedily rose to 101° F., and the pulse-rate became 140. The abdomen was rigid, and under the anaesthetic a tumour was felt. Twelve hours after the onset a quantity of odourless pus was removed from the pelvis and right side of the abdomen. The appendix was wrapped in inflamed omentum, and a concretion slipped out of a hole in it. After a perilous illness this boy got well.

Clearly the omentum is no protection when the infection is of a virulent type.

Here is another instance illustrating the significance of progressive increase in the pulse-rate:

Case xxi.

A boy, aged 12½ years, also a patient of Dr. Nunn's, went to bed with an abdominal pain. Next morning the temperature was 100° F. and the pulse-rate 97. At 5 p.m. the pulse was 108, and at 11 p.m., whilst sleeping quietly, it was 120. The temperature had, I believe, fallen somewhat. There was a little tenderness at McBurney's point and a little per rectum. A long appendix was pulled up from the pelvis, and its distal end was gangrenous. A rapid recovery ensued.

It is probable that the inflammation had been in progress about thirty hours. The boy was seen in the evening by Dr. Still. The meaning of the acceleration of the pulse was fully appreciated; it indicated a progressive poisoning from an inflamed and septic focus. The abdominal pain and the slight tenderness pointed to its situation.

The Rhythm of the Pulse.

Not only the rapidity of the pulse but also the rhythm of the pulse are to be taken into consideration.

I have already mentioned a case (Case xiii) in which the pulse besides being rapid—120—had also become very irregular. That child must have been absorbing a highly dangerous poison from the area of abdominal inflammation.

I have notes of many instances in which, with moderate degrees of abdominal inflammation, the pulse was intermittent. This has always occurred in little boys. As my friend Dr. Alexander Morison taught me, this kind of intermittency is of little importance, because it ceases as soon as the child exerts himself by sitting up in bed or walking about the room.

The Quality of the Pulse.

The quality of the pulse is also to be considered.

Case xxii.

On December 16th, a girl, aged 13½ years, was seized with vomiting and abdominal pain. On December 18th the vomiting continued. The temperature was 99° F., and the pulse-rate 96 and exceedingly full in volume. The abdomen was slightly tender in front. Inquiry elicited that micturition was painful. Per rectum the pelvic peritoneum was exceedingly tender. The pelvis contained an acutely inflamed appendix of the fetal type.

The pain on micturition and the tenderness per rectum indicated an acute pelvic inflammation, and the pulse of 96, but of exceptionally full volume, showed that it was of an acute and serious type. Here again the significance of pain during micturition had not been appreciated and no rectal examination carried out.

The Temperature.

The temperature, taken in conjunction with the other clinical signs, may help to confirm the diagnosis of an acute abdominal inflammation. I have, however, mentioned a case in which a very acute and dangerous abdominal inflammation was in progress but had not caused a rise of temperature (Case XIX). Thus it is unsafe at the beginning of the attack to draw favourable inferences from a normal temperature.

A simultaneous rise in the temperature and in the pulse-rate is a guide to the intensity of the inflammation and to the virulence of the infection.

CASE XXIII.

A boy, somewhere about 10 years of age, and who did not seem particularly ill, was admitted into St. Bartholomew's Hospital with much abdominal tenderness and a temperature of 102° F. and a pulse-rate of 120. Within a few hours the temperature rose to 103° F. and the pulse-rate to 130. The peritoneum was inflamed, with some amount of purulent fluid. The appendix was gangrenous and had a large concretion in it. It was wrapped up in the omentum, and lay upon the bladder. This child died of septic peritonitis five days after the operation. The omentum had not been much of a protection.

The duration of the acute abdominal inflammation is unknown, but had evidently been many hours. The case is to be contrasted with that in which the observation of a progressive increase in the pulse-rate led to the early removal of an inflamed appendix also wrapped in the omentum (vide Case XIX).

Leucocytosis.

When there is time and opportunity for a blood examination the diagnosis of an acute abdominal inflammation may be strengthened. An ascending leucocytosis has the same significance as an ascending pulse-rate. But when each hour is of importance, it is not right to wait for a blood examination if the means for making it at once are not at hand. But in saying this I do not wish to depreciate the importance of the blood count.

After Pneumonia.

It is well known that an acute pleuropneumonia may cause symptoms closely resembling those of an acute abdominal inflammation. But I question whether the diagnosis would be difficult if, in every case of supposed abdominal inflammation, the respirations were invariably recorded along with the pulse-rate and the temperature. When an acute abdominal inflammation is in progress there is always a moderate increase in the number of respirations, which may be more rapid as the abdomen becomes distended. But when the respirations reach 35 or 40 per minute, it is time to look for a cause within the thorax.

But even when pneumonia has been diagnosed, the possibility of a simultaneous acute abdominal inflammation is not to be dismissed.

CASE XXIV.

A schoolboy, aged 9 years, became ill with a cough and acute constitutional symptoms. The temperature rose to 102° F., the pulse to 120, and the respirations to 40 per minute. The sputum contained numerous pneumococci. Dr. G. F. Still was of opinion that the child was suffering from pneumonia. But at the same time there seemed to be abdominal pain, and the abdomen was a little distended. At first hardly anything could be inferred from the tenderness, because it seemed to be almost universal. The abdomen was so tender as to suggest an acute and general inflammation, but this was certainly not so, because a stethoscopic examination showed that active vermicular movements were going on.

Forty-eight hours afterwards the abdominal condition had become predominant. The temperature was still 102° F., and the pulse 112, but the respirations had fallen to 22. There was now marked tenderness at McBurney's point, and a leucocytosis of 14,500. The vermiform appendix was long and acutely inflamed at its distal end, which was withdrawn from somewhere about the right flank. Although I had expected to find some suppuration, no pus appeared, and therefore drainage was not considered necessary. The removal of the appendix caused a temporary amelioration, but five days later much fetid pus was let out, and ultimately the boy got well.

As the lymph on the appendicular peritoneum had in it cocci with a close morphological resemblance to encapsuled pneumococci, it may be that the appendicitis followed upon the pneumonia. Once started, it ran its course as an ordinary acute appendicitis, with a mixed infection.*

*I have once before seen an acute abdominal inflammation with appendicitis follow an attack of pneumonia, but the patient was 16 years old.—*Appendicitis*, second edition, Case 80, page 241.

During Acute Bronchitis.

An acute abdominal inflammation may occur during the course of other chest affections.

CASE XXV.

During the course of a severe attack of acute bronchitis a boy aged 14 years had sudden severe abdominal pain and vomiting which at last became almost continuous. Three days after the vomiting began the temperature was 100.8°, pulse 120, and the abdomen had much thin pus in it, caused by gangrene of the appendix. In spite of this the abdomen moved well, and was only slightly tender. After a desperate illness, and after more pus had been removed from the abdomen by a second operation, this boy got well.

It is difficult to infer the relationship between the acute bronchitis and the appendicitis; but there would not have been such a long delay if the significance of the persistent vomiting had been appreciated. Apart from that, the heightened temperature and the rapid pulse might easily have been attributed to the acute bronchitis.

Following Scarlet Fever.

I have elsewhere[2] described a perplexing case of a girl, aged 5 years, and in which, after scarlet fever, an attack of acute appendicitis came on, and ended in a localized abscess in the right iliac fossa. At first the symptoms were attributed to an acute suppurative arthritis of the hip, because that joint was kept flexed and immobile. But an examination under anaesthesia revealed the abscess, which was opened, and the child got well.

Following an Operation.

An acute abdominal inflammation occurring after an operation is to be dreaded, for in children the abdominal pain may not be particularly noteworthy, and the constitutional disturbances may easily be considered the results of the operation.

CASE XXVI.

A girl, aged 8, was operated upon for the removal of enlarged tonsils and adenoids. This was done upon a Monday. The following Thursday abdominal pain took place, with vomiting. On the Friday a period began; on the Saturday the temperature, which had been high, fell below normal, and the pulse-rate rose to 140. There had been pain during micturition. The distended abdomen was moderately tender, and likewise the pelvic peritoneum.

The abdomen had much septic fluid in it, and especially in Douglas's pouch, which contained a gangrenous appendix of the fetal type. Forty-eight hours afterwards death ensued, owing to general septic peritonitis.

The morbid anatomy and pathology were the same in character, but greater in degree, as in the other cases which were operated upon at once (Cases XIII, XXI, and XXII), and which recovered. The onset of the period may have introduced an element of uncertainty.

CASE XXVII.

The onset of the period in another girl, aged 13, five days after appendicectomy caused alarm, because the temperature was 103° F., and the pulse over 100; but the child seemed well, and nothing could be found to account for the constitutional symptoms, except some tenderness when the uterus was pressed upon.

Perforation of Intestines.

So far, with one exception (Case I), the foregoing cases of acute abdominal inflammation began with an appendicitis. But other causes are to be reckoned with. In my successful operation for diffuse septic peritonitis[3] the first patient was a boy aged 7 years, and the peritonitis had been caused by a perforation of the small intestine by the husk of an almond nut. In another case, acute localized septic peritonitis occurring in a boy, the intestine had been perforated by a bristle. I have not seen the intestine of a child perforated by a typhoid ulcer.

Tuberculous Inflammation.

In infants and children an acute abdominal inflammation is sometimes tuberculous. These cases have usually come under my care because of an acute abdominal crisis which seemed likely to require an operation. But I cannot help thinking that before the crisis there should have been premonitory signs. Doubtless physicians meet with these tuberculous cases in their earlier stages, and by suitable treatment ward off the abdominal crisis.

I have described elsewhere[4] the case of an infant, aged 3 years, who was admitted with acute intestinal obstruction. On admission the pulse was 130; the temperature then was only 97° F., but had been higher. The abdomen was not

very tight or tender, and under an anaesthetic the house-surgeon felt a tumour, which was thought to be an intussusception. It was, in fact, a huge bunch of tuberculous mesenteric glands with a good deal of acute peritonitis. These glands could not be removed. Distended coils of intestine were emptied by two incisions. The child recovered from the operation, but a year and four months later was admitted with a fresh abdominal crisis, from which she died, the abdomen being full of pus. It is to be supposed that some of the tuberculous glands which I had seen had softened or burst into the abdomen.

The intestinal obstruction was partly mechanical and partly inflammatory. It is probable that in the early stages it would have yielded to enemata. In a similar case the tuberculous glands which could be felt in the abdomen were also taken for an intussusception, because there were constipation, vomiting, and abdominal distension. But enemata were given with success, and the urgent symptoms passed away. Had the enemata failed laparotomy would have been performed. I have notes of two cases in which abdominal tumours which were obviously acutely inflamed were supposed to be tuberculous, but proved to be intussusceptions on the point of gangrene. The difficulties in diagnosis are less when in a child an acute tuberculous peritonitis has caused an effusion of fluid. The prognosis, too, is better, and recovery is aided by the removal of the fluid.

CASE XXVIII.

An acute abdominal inflammation in a boy, aged 14, and which was thought to be a second attack of acute appendicitis, proved to be tubercle of the omentum, caecum, right colon, ileum, mesentery and mesenteric glands, and perhaps of the appendix. During the attack the temperature was 101° F., and the pulse over 100. An acutely tender and painful swelling could be felt beneath the right linea semilunaris. The operation relieved the abdominal symptoms for some months, but ultimately the boy died of general tuberculosis.

The foregoing shows that whilst in infants and children an acute abdominal inflammation usually begins in the vermiform appendix, that nevertheless other causes have always to be taken into consideration.

Danger Signals.

As an operating surgeon I am usually summoned to cases in which an acute abdominal inflammation has been diagnosed and considered to be of the dangerous type which requires an operation.

But other cases are seen by physicians and by those in practice which in their judgement are likely to recover without an operation. This side of the question has not had the attention it deserves, and which I trust it will have in this debate. Even when I have come to the conclusion that the local and general symptoms are subsiding, I have the patient watched almost hour by hour, and surgical help at hand, until it is certain that the attack has subsided. If an acute appendicitis has been diagnosed, it is undoubtedly safer for an experienced surgeon to remove the appendix than to leave the patient. I never cease regretting a case in which I left a patient only to be summoned days afterwards to open an extensive abscess.

The organization of operations is so complete that an emergency operation can be carried out as well as any other, and I question whether the risks are greater. The risks are the risks of the disease, and not the risks of the operation. How often has there not been delay, although the appendix has been perforated or gangrenous?

In the acute abdominal inflammations of children the first twenty-four hours are all-important. Within twenty-four hours the clinical signs which point to the severity and danger of the attack are sure to have manifested themselves.

The clinical signs are never the same, but there is always at least one danger signal:

(1) A sudden acute onset in the midst of health, followed by an elevation of the pulse and temperature. (2) A progressive increase in the pulse-rate. (3) A rapid pulse which intermits. (4) A simultaneous and progressive increase in the pulse and temperature. (5) A rigor. (6) A leucocytosis. (7) Acute abdominal pain. (8) Abdominal tenderness, especially when its extent is known to be increasing. (9) Abdominal rigidity. (10) Pain during micturition or defaecation. (11) Retention of urine. (12) Abdominal distension and intestinal obstruction.

An acute inflammation beginning in the pelvis or in the right flank is oftenest overlooked.

The Surgical Treatment.

The surgical treatment of acute abdominal inflammations in infants and children obviously depends upon the diagnosis. In the majority of instances an accurate diagnosis can be made at an early stage, and is followed by an early operation which is successful in its results. Judging from what one hears and reads, there is a craving for a rule by which to recognize the cases which require an immediate operation and discriminate them from those which do not.

To my mind the whole matter depends upon a correct diagnosis and a proper appreciation of the meaning of the clinical symptoms, especially of those danger-signals to which I have referred. The accuracy of the diagnosis depends upon the clinical acumen, clinical training, and clinical experience of him who makes it.

The site of the incision and the steps of the operation depend upon the diagnosis. An abscess at the outer side of the caecum and colon is opened by an incision towards the right flank. Only the abscess cavity is dealt with, and the general peritoneal cavity is not, if possible, opened. The cause of the abscess—invariably the vermiform appendix—is investigated with extreme caution. The appendix is best removed if, in the judgement formed at the time, it can be extracted without undue disturbance or damage.

When the focus of septic inflammation is pelvic, an incision at the outer edge of the right rectus abdominis is usually preferred, or occasionally an incision at the inner edge of that muscle.

When a retro-colic abscess has been diagnosed, the abdomen is opened by the oblique incision and packed with gauze. After that has been done the abscess is opened and the appendix excised. In children it is very unusual to meet with an abscess in the iliac fossa or in the front of the abdomen which can be opened without encountering the general peritoneal cavity.

Sometimes the laparotomy is exploratory with an incision in the middle line. This exploration may reveal a perforation of the intestine, an intussusception inflamed and becoming gangrenous, or an acute tuberculous inflammation. A case has been mentioned (Case XXIV) in which a pneumococcic infection may have started an acute abdominal inflammation. Except in cases of traumatism, I have not met with infections of the peritoneum with the other pyogenic organisms. I do not propose to refer to the surgical treatment of the conditions met with at exploratory operations. Obviously the surgical treatment has to be guided by the conditions met with after the abdomen has been opened.

Nor do I propose to discuss the after-treatment. An early operation is followed by a quick and uneventful recovery, and but little after-treatment is required. The operations which have to be done in the later stages are followed by complications which have to be met in a variety of ways. Instead of discussing these, I suggest that our time would be more profitably spent in discussing the diagnosis, and more especially those elusive clinical signs which point to danger. If these were recognized and understood, we should have few operations in the later stages of the acute abdominal inflammations of infants and children, and there would seldom be any necessity for elaborate methods of after-treatment.

REFERENCES.

[1] *Appendicitis*, second edition, Case 65, p. 191. [2] *Appendicitis*, second edition, Case 75, p. 223. [3] The Surgical Treatment of Diffuse Septic Peritonitis, *Medico-Chirurgical Transactions*, vol. lxviii. [4] Tuberculous Disease of the Mesenteric Glands and its Surgical Treatment, *St. Bartholomew's Hospital Reports*, vol. xlv. p. 123 et seq.

DISCUSSION.

Mr. R. H. ANGLIN WHITELOCKE (Oxford) said the chief difficulty of the subject was the diagnosis. In many respects inflammatory conditions in children presented phenomena different from those obtaining in the adult. Amongst these might be enumerated the rapid onset and spread of the inflammation without any previous history; the frequent absence of pain, rigidity, or distension and constipation; there instead often was diarrhoea, the difficulty sometimes when central symptoms were present; and again in cases of pulmonary inflammation they had not infrequently abdominal tenderness and rigidity. In making a diagnosis the clinician should never fail to examine the

pelvis through the rectum, and to inquire into the action of micturition; a blood count should be made when there was time or opportunity; while the quickening pulse, with or without fever, was of the greatest importance. In female children the pain often (in the speaker's experience, in one-third of the cases) began on the left side, and had more than once turned the medical attendant from a diagnosis of appendicitis. In young male infants retraction of the right thigh was often seen, even before definite abdominal tenderness or rigidity was palpable. In cases of pneumococcus and streptococcus infection the prognosis was always grave, for in those there was almost no tendency to localization, and a diffuse and rapidly extending purulent peritonitis was the rule. Unless those cases were treated surgically early there was little or no hope of recovery. He illustrated the rapid onset and absence of symptoms in the case of a small child, aged 3½, who had been perfectly well until 11.30 one day, when, after running about in the garden during the morning, he vomited. The family doctor, happening to be in the house, was asked to see the child, and observed as the only symptom the drawing up of the child's right leg. An hour later Mr. Whitelocke saw the child, and thought, in addition, that there was slight abdominal rigidity. Laparotomy was performed at 6.30 p.m. on the same day, when a completely gangrenous appendix with a concretion was found and removed. The child suppurated violently, had a fight for life, but eventually got quite well. Exactly one week later this child's cousin had a similar attack; an eminent London surgeon saw him, and operated thirty-six hours after the onset. This patient unfortunately died, probably because it had not been seen so soon as its cousin. It was interesting from the family relationship, and that the children had been previously for some days playing together. As to treatment, as soon as the diagnosis was made of an obstruction due to peritonitis or acute abdominal symptoms, a laparotomy should be made, and he agreed with most that Mr. Lockwood advocated. In children too much tenderness could not be advocated as to surgical manipulations in dealing with them; they bore operations badly, and no more should be done at the time than was absolutely necessary. The appendix should be removed only if it was easily found. The Fowler position was not necessary, but proctoclysis, or, if this were not well borne, intravenous saline infusion should be utilized for the first forty-eight or sixty hours. Enveloping the whole abdomen, or even lower thorax, with warm applications for the first two or three days, was of great assistance in supporting the strength of the child and of assisting it the better to develop its immunity. Secondary operations should not be used, if possible, until the child had sufficiently recuperated from the illness.

Dr. W. J. TYSON (Folkestone) said: One can hardly imagine anything more important than the quick and accurate diagnosis of acute peritonitis in children. There are cases that we practically at once dismiss from our consideration—namely, all acute diseases of the ovaries, although, of course, these occur in adults, and tuberculous peritonitis; for in children these are seldom acute, and if so the diagnosis need not give us much anxiety. If, then, there is sudden perforation in tuberculosis of the bowel, then one gets all the marked symptoms and signs associated with this state. But there is a condition of intestinal toxaemia coming on suddenly in children which for the first twelve hours may cause much difficulty in diagnosis, but the case soon discloses itself. Really what acute peritonitis in children comes to in the end is appendicitis, for cases of Meckel's diverticulum disease are somewhat rare, and the treatment of these will not differ from the above. The alarming increase of appendicitis and the mental unbalance excited thereby give great cause for alertness in diagnosis. Personally I am in favour of early operation, and I have come reluctantly to this opinion. I think that every child, considering the great chance of getting appendicitis and the fatality of delay, should be within reach of an operating surgeon.

Mr. C. FIRMIN CUTHBERT (Gloucester) said: I regard a rectal examination as of importance in all abdominal cases in children. It seems that children do not at all mind this examination, and yet doctors often do not often utilize this method in young children for fear of hurting them. Some years ago my paper on a plea for early operation in appendix cases seemed to do good in my neighbourhood. With regard to matters of diagnosis—right-sided pneumonia and other such like—a surgeon should protect himself with a stethoscope, in the same way as he would in adult cases. Endeavour should be made to exclude the gastric crises of locomotor ataxy. Another illness which must never be overlooked is typhoid fever. A surgeon is liable to be asked to operate upon an abdomen which may be an ordinary case of typhoid. Another important matter is intussusception, which may be very difficult to differentiate from an acute appendix. This especially occurred in a child only a few weeks old and which began to be ill a few day previously, and then the period of repose came, and then acute symptoms, with swelling in the right lateral region. The occurrence at this very early age was exceptional for appendicitis, and one would have been more on the look-out for intussusception, and especially did the period of repose, followed by the acute symptoms with a lump in the abdomen, tend to mislead one into this actually definite diagnosis before operation, although this is not very important, considering the urgent necessity of laparotomy in any case.

Mr. S. MORGAN (Brighton) mentioned the case of a girl, aged 9, in the Children's Hospital, who was sent from the country as a case of appendicitis, but on operation was found to be suffering from a perforation of the ileum 3 in. above the caecum by a large pin. Also a case to show how very sudden and serious acute tuberculous peritonitis might be. A girl of 13 was very hot from a cycle ride when she drank milk from a tuberculous cow. In a few days she became very ill, and died in less than a fortnight from acute tuberculous peritonitis. A third case he recorded was that of a boy of 9 admitted to the hospital for acute inflammatory symptoms. On operation a flow of ammoniacal urine occurred, and it was found that a dilated urachus had been opened. The boy eventually got well.

Dr. L. A. PARRY (Brighton) remarked that every year's experience proved more positively and clearly that in acute inflammatory abdominal conditions in children, early operation was essential. One should not wait till an absolutely accurate diagnosis as to causation or exact condition of organs, or even of the particular organ affected, could be made. He was absolutely convinced that in acute appendicitis operation should be undertaken at once, in whatever condition the organ might be. It gave the best chance of recovery, for no one could possibly foretell how rapid and severe might be the progress of what at first appeared to be quite a mild case. This rule of immediate operation was one to which there were very few exceptions indeed. There were one or two points in connexion with another acute abdominal condition—namely, intussception. It was often said in textbooks that a point in the diagnosis of this condition from acute ileo-colitis was that in the former the temperature was not raised, whilst it was in the latter. Now that was not a fact; the temperature might certainly be raised in intussception, and, therefore, this point must not be relied on too much. It was also said that if a rectal examination were made in a case of intussusception no faecal matter would come away on the finger, but in the early stages this was not accurate—there might be a little faecal matter on the finger. The speaker knew that there were many difficulties in the differential diagnosis of these two conditions, and believed that if after a careful study of the histry of the case and a very thorough examination one was still in doubt, it was better to do a laparotomy. Even if no intussusception were found, the risk had been slight; if the case were left and intussusception were present, disaster was almost inevitable. Like Mr. Lockwood, the speaker had seen acute appendicitis a day or two after the operation for removal of tonsils and adenoids. Sometimes abdominal pain after this operation, especially if there had been much blood swallowed, might be due to a collection of blood clot in the bowel, giving rise to a fairly definite feeling of resistance on examination. He agreed with Dr. Tyson as to the great frequency of appendicitis, and thought a committee of the Association might well be formed to investigate.

Dr. G. L. CRIMP (Walton-on-Thames) said he had one day seen a girl, aged 8, with abdominal pain in the left hypochondrium; temperature 99.6°, pulse 100, bowels open. The child was not very ill. Next day the child had less pain; temperature 98.8°, pulse 110, bowels open. He advised a more liberal diet. At mid-day on the third day the mother gave beef, potatoes, and greens, which the child only picked over, but it seemed pretty well. That evening, at 9.45, he found the child in acute pain, with tenderness in the left hypochondrium and umbilical region; temperature 100°, pulse 120, respirations 30. There was irritability of the bladder; the rectal examination was negative. He observed an inverted respiratory rhythm. The breath sounds at the right base were somewhat rougher than at the left base. He was disinclined, from the child's appearance, to believe the cause to be thoracic, so opened the abdomen, taking the route of the right iliac region, with an oblique incision, and came down on a mass of sticky, stinking pus, not very fluid, and glueing the coils of intestine together. The appendix was twined upwards, but not easily separable, so he put a tube in and closed up. The pus contained a lanceolate diplococcus, which he took to be pneumococcus. The immediate result was good. The temperature gradually subsided, and the patient seemed to be on the right road, when ten days afterwards respiration became hurried, the right base became dull, the breath sounds diminished. The child (who had for want of hospital room been operated on and nursed at home) was taken to hospital. The right pleura was explored, and pneumococcal pus let out and drained. It, however, gradually went downhill and died. While this case was in progress another child, aged 9, had been ill (supposed bilious), and he was asked to see her when very ill; he took her into hospital virtually moribund, operated, and found general peritonitis. She died next morning. These two children had been sitting next to one another at school, and were close friends.

Dr. H. BRAMWELL (Nunney) said that he thoroughly agreed with Mr. Lockwood that severe symptoms were often hidden by children for one reason or another, and it was very surprising how very severe a lesion might be borne by a child and the child go about without complaining. This was most important in appendix cases. Appendicitis with the appendix full of pus and about to burst was hardly complained of until the perforation or peritonitis commenced. He thought there was some relation between the prevalence of appendicitis and the prevalence of gastric influenza. The influenza germs attacked adenoid tissue, and appendicitis followed tonsillitis. In gastric or intestinal influenza the colon soon recovered, but the narrow appendix often did not clear itself; obstruction occurred, and appendicitis started.

Dr. C. W. HUTT (Brighton) observed that he desired to ask for information on the subject of acute intestinal ulceration not coming under the usual headings. He remembered especially two cases where investigations by competent pathologists failed to give an adequate explanation. In the first case a girl 8 years of age was sent into hospital with the diagnosis of intussusception, where the child was considered to be suffering from "acute diarrhœa," whatever that may be. No operation was performed; the child died within twenty-four hours of the onset of the symptoms. *Post mortem*, two ulcers were found in the ascending colon; a complete pathological investigation, including bacteriological examination, failed to discover the cause of the disease. The second case was that of a child 6 years of age, who was admitted into hospital for a minor operation. The child was suddenly taken ill, and as examination of the abdomen revealed signs of acute inflammation an operation was performed, but the child died within a few hours. *Post mortem*, several ulcers were found in the small intestine, but no obvious explanation presented itself. He would like to say how much he, for one, appreciated the discussion.

Dr. CHAFFEY (Hove) asked Mr. Lockwood to give his estimate of the importance of meteorism in the acute abdominal affections of children, quoting a case in which its presence had proved very confusing.

Dr. A. E. NAISH (Sheffield) emphasized the frequency of the concealment of even severe pain by children who were looking forward to some treat, and the importance to the physician of estimating the mother's powers of observation. He considered that significant should be differentiated from insignificant irregularities of the pulse in these acute cases by means of the polygraph, as otherwise there was no certainty on this point. He called attention to the slightness or absence of abnormal physical signs in the early cases of pneumonia which were liable to be confused with appendicitis. He thought that the respiration-rate not infrequently rose very high—even to 60 or over—when no pulmonary disease was present. He called attention to the acute abdominal distension which sometimes occurred late in the course of pneumonia, and which was sometimes mistaken for obstruction.

The PRESIDENT congratulated Mr. Lockwood and the Section on the excellence of the discussion that had taken place, and referred to the very difficult cases of appendicitis in infancy, so rapid in their course, so urgently calling for immediate operative interference. He quoted cases of acute pancreatitis occurring as a sequel of mumps, very difficult to diagnose, and tending to recover without operation. He could not agree with Mr. Lockwood in the belief that rapidity of the respiration in children would serve to distinguish pneumonia from appendicitis, and he commented on the absence of physical signs that so often characterized these doubtful cases of pneumonia that simulated appendicitis. He also spoke of the rare epidemics of appendicitis sometimes seen in schools, adding that the not infrequent association of tonsillitis with appendicitis was worthy of further investigation.

Mr. LOCKWOOD, in reply, answered briefly a few of the questions put to him by the various speakers.

THE NECESSITY FOR SELECTION AND FOR SKILLED SUPERVISION IN THE TREATMENT OF SPINAL DEFORMITIES BY EXERCISE.

By J. S. KELLETT SMITH, F.R.C.S.Eng.

SOME twenty-five years ago the treatment of lateral curvature of the spine presented a big problem. Cases were undoubtedly becoming more numerous owing to the drift of population to large centres, the increase of casual labour and consequent low standard of living amongst certain classes, and to the physical effects of school work upon the not too sturdy children of the towns.

Mechanical treatment of the deformity by means of a supporting apparatus was certainly uppermost in the minds of most practitioners—the very name of lateral curvature seemed to be associated with some form or other of spinal scaffolding—and yet a doubt and a dissatisfaction were present. The instrument makers' spinal support was apt to be a cumbersome affair, heavy and ill-fitting, and quite capable of increasing the deformity it was intended to cure. There were few who had the skill to produce an efficient and comfortable apparatus, and their fees were naturally beyond the reach of a large proportion of patients. The Lewis Sayre design of plaster jacket was cheap, and promised a high ideal. It was tried all over the country, but the germ of truth it contained was ineffective by reason of the neglect of certain important points in the mechanics of the spine itself; the results were disappointing. It was also disagreeable to apply and burdensome to the patient, and its abandonment was a matter of a comparatively little time. A very temperate and reasonable account of the state of affairs about this date is given in the eighth edition of *Erichsen's Surgery*:

> There are three principles of treatment that require to be carried out in the management of these cases. The first is the improvement of the general health—unless this be effected nothing can be done; the second is to strengthen the muscles of the spine; and the third to take away as much as possible the weight of the head, neck, and upper extremities.

The first and second principles are taken together. Iron, aloetics, animal food, and exercise in the open air

are recommended; together with sponging the back each morning with salt or vinegar in cold water, followed by friction of the erector spinae muscles and their prolongations either with the naked hand, or with some slightly stimulating embrocation.

At the same time . . . the use of the hand-swing may be allowed, or callisthenic exercises practised and swimming learnt; by it the back is strengthened, and its muscles braced more effectually than in any other exercise. . . . By these means, assiduously continued for some length of time, the muscles of the back may be strengthened, and increase of the deformity prevented; and in this way the slighter cases of lateral curvature . . . may be cured.

Under the third heading there is given a warning to avoid the unnecessary employment of cumbersome machinery in slight cases.

The heavy apparatus that is often applied to growing girls overpowers and compresses, rather than supports and directs, the imperfectly developed and still yielding skeleton. By the use of complicated machines the muscles of the back become weakened and atrophied from disuse; the pelvis is compressed and contracted; and those very evils are produced by the mechanism which it is the object of the surgeon to avert or correct.

Then follows a description of a good spinal support of the pelvic band and axillary crutch type, but again with a recommendation that even when this is employed attention must be given to keeping up the general strength, and that of the muscles of the back especially, by cold bathing and frictions.

The only allusion to Sayre's plaster jacket in the whole article is that it

has been used for lateral curvature, but is now generally condemned, as it prevents movement completely, and thus increases the weakness of the muscles.

There is a gleam of promise in all this—a promise that the early case might be delivered from the tyranny of steel and leather harness, and cured by the employment of attention to general health and by exercises. And the value of muscle training in cases of all grades is recognized and emphasized. The pity of it is that the directions for exercise are so nebulous:

Exercise in the open air . . . use of the hand swing, callisthenics, swimming, sponging, and friction.

Exercise in the open air at that time meant the monotonous procession, two by two, or a languid game of lawn croquet—both unsuited to the spinal curvature case. Swimming demands great physical energy, and is not a serious training measure for a weakling with a low-grade musculature. There remained the callisthenic mistress and the gymnasium master, as often as not an ex-army instructor, who ran all pupils through the same mill, and who, from their ignorance of anatomy, were entirely unsuited to have the charge of deformed children. Their results were largely a matter of chance, and therefore did not inspire the practitioner with confidence.

The history of a lady who had the misfortune to be treated at this period is given by herself as follows:

At 13 I outgrew my strength, and at 15 my spine was found to be curved. I had great pain and weakness in my back. A local doctor advised a felt case, which was put on hot at a place in Birmingham. At 16 the back was worse, and I went to a specialist in Birmingham, who put on a plaster-of-Paris case, which was taken off at night. He also gave me three exercises (hanging on a trapeze, pulling a rope through a pulley, and trunk raising from the prone position) to do three times a day. My days were monotonously spent in sitting in an invalid chair after my meals, doing my exercises, or lying on my face on a sloping board. It was impossible to develop in any way, and I was in misery with this 10 lb. case on my back. After six months I left off the case with my father's consent, and lay out in the open air as much as possible, but I got weaker, and my spine not any better. Finally, I went to an "all-round" doctor in London, who said I ought not to have had these cases, and that it had become a nervous disease. He told me I must throw it off and forget I had a spine, and live my life like other people. . . ."

This lady ended up with a spine so deformed and the source of such distress that it threatened at one time to cut short her professional career. The whole history reflects the great want at that time—the want of some definite and set course of treatment. Things were ripe for a strong lead, especially in the matter of curative exercise, and the strongest lead came in the form of what we may call the Swedish invasion. It is true that certain of our own men were working in the same direction, but the British are apt to throw a glamour over anything foreign; their spirit is not the spirit of Naaman; and the Swedes pushed their advantage so astutely that even at the present day a Swedish name may count for more than the finest training and qualifications. Their influence was certainly stimulating; the best of them did excellent work, but their many imitators and those who hurried over here with their nationality as their chief asset, fathered upon Petter Henrik Ling methods sufficient to make his body turn in the grave.

The same thing holds even now. Some of the so-called Swedish training institutes in London, which grant certificates to their pupils after a few weeks' tuition—and the payment of a fee—constitute a veritable scandal. The cure of spinal curvature is always one of their trump cards, and it is quite certain that the practice of these incompetents throws a great amount of discredit upon the application of exercise to disease. It is probably responsible also for some influence upon those modern writers who profess to see no good whatever in other than mechanical treatment. One of these states:

Gymnastics will no more prevent or cure actual spinal curvature than they will prevent or cure scarlet fever, (and then proceeds): Since 1880 gymnastic exercises have been universally adopted at the primary schools. . . . At the very lowest estimate, over half the present population of the British Isles have passed through the primary schools, and have enjoyed the presumed paramount advantages of physical exercises. That being so, of course one would look for the results promised by the gymnastic practitioner. And one would expect an enormous diminution in the cases of spinal curvature. But is this so? Most certainly not. . . . Hence I think I may be permitted to very forcibly assert that exercises will not even prevent the accidence of spinal curvature, and much less can they pretend to be factors in its cure. They will neither stop nor will they remedy actual curvature.

This argument is quite fallacious. The only true deduction is that the brief periods of physical drill given at the schools are not sufficient to nullify the evil effects of desk work, and another important fact is that the movements are designed for the culture of normal children, and do not pretend to be curative in any sense.

Another author devotes nearly 200 pages to the subject of scoliosis, and dismisses the most intelligent and most effective series of exercises in a footnote quotation. A third describes the same series at greater length, but with an expression of doubt, and his directions are so sketchy that anything like exact working from them is impossible. And yet these men are authorities whose opinions are entitled to every consideration, and their attitude on this question is so opposed to that of the believers in the efficacy of exercises that it calls for careful analysis.

Any therapeutic measure is valuable in proportion to its range of application and its exact adaptation to a particular case. That is to say, that success in practice demands careful selection of cases and skilled supervision of the treatment. And this is just as true of the use of exercises in spinal deformities as it is of the use of a powerful alkaloid, or a vaccine, or the surgeon's knife in other maladies.

A certain amount of bitterness has been introduced in the wordy warfare between the advocates of the mechanical and gymnastic methods. In the beginning each took advantage of a real flaw in his adversary's armour—the cumbersome nature of the spinal supports, on the one hand; the want of an exact definition of which exercises were to be employed in which cases, on the other. Each apparently was more than a little blind to the merits in his opponent's system, and, in his desire to possess the ground between the two extremes, ignored the cases especially suited to each. But things are different now, and there is no longer any excuse for any such sharp division between the two schools of thought. It is easy to obtain spinal supports which are efficient and light. The use of plaster-of-Paris for a corrective jacket is better understood, whilst treatment by exercises has been placed upon a scientific basis, and is entitled to recognition as a definite remedial agent, although, as McKenzie puts it, it is still the Cinderella of the therapeutic family.

The truth is that the territories overlap; a good number of the early cases can be cured by exercise alone, others demand a combination of exercise and mechanical support, and some of the later ones are not suited for the powerful types of corrective exercises at all. It is necessary to

take into account the fact that lateral curvature occurs, as a rule, in what we may call a complex patient, and that surgeon will have the best results who submits each case to the most careful analysis and who gives the strictest personal supervision to whatever method of treatment he may adopt.

The following notes will serve to illustrate how advisable it is to approach the question with an open mind, and not as a partisan; and, as a firm believer in the efficacy of exercises for selected patients, I have chosen cases and instances, for the most part, in which some other factor than the crooked spine made it necessary to combine the exercises with mechanical support or other measures, or to forego them altogether.

I. The young girl passes through a period of rapid growth somewhere between her tenth and fifteenth year, and it is during this period that she is especially prone to develop a spinal curvature. Under ordinary circumstances this causes little trouble in treatment if the patient be otherwise healthy; but occasionally the mental powers seem to undergo an eclipse for the time being, and this fact may alter considerably the aspect of the case. Two types may generally be recognized. In the first the patient is of the "wiry" build, and is intellectually acute beyond the average, but she is incapable of sustained mental effort, and therefore of sustained physical effort; her mental energy, so to speak, is deficient in quantity.

N. E. S., aged 13 years. Has grown tall very rapidly. Menses not started, but mammae prominent and some general acne. Spine presents a total curvature, convex to the left, and there is definite, though slight, evidence of rotation. (Grade II, early.) Has a habit of standing and sitting with the pelvis down on the left side. After five months of exercise treatment the spine was capable of being held in the exact middle line. Exercises were done well and with great intelligence, but when supervision was withdrawn, and in the absence of any stimulus, she becomes, as the parents express it, "vacant," and assumes her vicious attitudes. She was therefore fitted with a light spinal support for wear under her corsets in the daytime. A modified programme of exercises is carried out every day and progress is excellent. There is no doubt that both exercises and spinal support will become unnecessary as adolescence is established.

The patients of the second type are usually well grown and of rather sluggish temperament, having not much mental or physical initiative; big-jointed, with loose ligaments, often presenting over-extension of the elbow joints, weak ankles, flat-foot, etc. They are afflicted in a marked degree with that lack of muscle sense which is so frequently to be noted in spinal curvature subjects.

N. H., aged 16 years. Double curve (D right convex, L left convex). Right ribs and left lumbar muscles prominent (Grade II). Shows good improvement under exercise treatment, but the nurse in charge reports that she is so "stupid" that she cannot remember her exercises from day to day, and at once assumes a vicious attitude when left alone.

L. N., aged 15½ years. Total left convex curve, with evidence of rotation (Grade II), due to asymmetry of the trunk. Very backward mentally, and is in class with girls of average age 10 years. Nurse in charge reports that she does her exercises well, but "never stands straight unless spoken to."

Both these patients are cases for combined treatment—a light spinal support, together with a full period of exercise each day.

II. In some cases the musculature is so feeble and the capital of energy so small that even the most gentle exercises produce injurious fatigue. This state of things occurs generally in older patients, in whom an acute or chronic illness has led to an exacerbation of an already existing curvature; they are often the subjects of abdominal ptosis and chronic digestive troubles. Such cases present a considerable problem. I have employed lately the Bergonié method of exciting muscular contraction, by means of a faradic current of low tension, with excellent results, not only as regards the muscles themselves, but also as regards the abdominal troubles and the patients' general state. They soon reach a condition in which they are able to perform their voluntary exercises with comfort and with benefit.

M. C., aged 43 years. Double curve of long standing, with marked bony deformity (Grade III). She suffered for some time past from dyspepsia, and is now wasted to the point of emaciation. Marked abdominal ptosis. The spinal trouble has recently become acute; the deformity is increasing, and the lower curve (D 10 to L 3) is the seat of great aching pain. Any attempt at exercise produced great exhaustion. This patient was therefore treated by the Bergonié method for several weeks, and is now successfully stopping the fresh spinal symptoms by means of appropriate exercises.

III. Leduc has advocated the employment of electrolytic sclerolysis in certain cases with a history of chest trouble preceding the scoliosis. He diagnoses the presence of pleural adhesions, and softens them down by driving in Cl ions. It is difficult to estimate the exact value of this proceeding, but the following is an instance in which ionic medication was of great value.

Nurse K. had undergone an extensive dissection of the posterior triangle and axilla of the same side for the removal of tuberculous glands. The scars thickened up to an almost keloid character and became painful. The head was inclined to the shoulder and the upward arm movements were limited. This constrained attitude led to the development of a spinal curvature in the upper dorsal region. Exercises were impossible on account of the tenderness of the scars. These were treated by electrolysis, the negative pad applied to them being soaked in hot sea water, which, I think, gives a better result than plain salt solution. In six weeks she was able to commence a full and successful course of curative exercises.

IV. An important group of cases embraces those in which the spinal deformity is dependent upon or is associated with some visceral lesion. These cases have scarcely been given the prominence they deserve; the fact that pain is so frequently referred to the back concentrates attention upon the spinal curvature alone, and if this be treated without reference to the underlying cause no good result is to be expected. An inflamed or tender viscus may act upon the spinal column in two ways: (1) Through the patient assuming an habitual vicious attitude in order to relieve pressure; (2) through localized contraction of muscles provoked by reflex nerve irritation.

Both causes may be in operation at the same time. Head's work upon the second point is too well known to need reiteration.

F. D., aged 35 years. Always had a "weak back" from her fifteenth year, and has been ordered various periods of rest for its relief. Three years ago, however, pain became gradually localized to left iliac region, spreading round to waist line. This led to examination and to the subsequent fixation of the left kidney and removal of the left ovary. Improved for some time, but the spine still aches. Patient has a general curve convex to the right, with elevation of the right ribs and prominence of the erector spinae on the same side. The normal lumbar curve tends to become obliterated after standing for a little time, and there is prominence of 12 D spine in the fatigue attitude. The position of the aching pain is localized D xij to L ij. General musculature rather feeble.

This patient was prescribed a course of suitable exercises, and is showing great improvement both physically and as regards the aching pain. Exercises would not have been correct treatment before her operation.

M. C., aged 30 years. Back became painful about lower D region when 18 years of age. She saw a doctor, who diagnosed "consumption of the spine," and ordered complete rest on her back for six months, and afterwards a spinal support with a headpiece. This was worn for six months, and then discarded by the patient herself. She now presents a curve in the D region convex to the left. She complains of great pain in her right iliac region, and connects this herself with the painful region of the lower D spine. Pain much worse before the menstrual periods.

The patient was referred to hospital, where the appendix was removed and a ventrifixation of the uterus carried out. The spinal condition will be treated in due course by exercises.

One might multiply instances of this sort, but the cases quoted will serve to show the importance of careful analysis and selection before submitting the patient confidently to a course of exercises, and also how associated measures may help to a successful issue.

It would seem superfluous to insist upon the necessity for personal supervision were it not for the great number of incompetents, already alluded to, who are being turned out with certificates of proficiency in "medical gymnastics," etc. A recent number of a paper devoted to nurses contained twenty advertisements of institutions offering courses of instruction extending from three months onwards, and at a cost of £3 3s. upwards! The results may be imagined. And yet not only are cases sent to these people, but are often delivered entirely into their charge. The consequence is failure, and discredit to the whole principle of treatment by exercise.

The ideal method is to place the patient at a school where such cases are understood. The atmosphere of discipline is good, school work and rest can be duly proportioned, and the presence of other pupils undergoing treatment stimulates interest and avoids monotony. A nurse trained in one's own procedure pays daily visits

and superintends each period of exercise. But the surgeon directs the whole conduct of the case; he initiates every new movement and sees that it is carried out properly. Efficient exercises are powerful measures which have to be suited to each individual case, and it is only by strict supervision that one can realize their full value—namely, curative in the great majority of selected early cases, and an invaluable adjunct to those requiring mechanical support or other measures.

THE TREATMENT OF ACUTE POLIOMYELITIS (INFANTILE PARALYSIS).

By A. S. BLUNDELL BANKART, M.C., F.R.C.S.,

Surgeon to the Royal National Orthopaedic Hospital, the Hospital for Epilepsy and Paralysis, Maida Vale; Assistant Surgeon to the Queen's Hospital for Children, etc.

THE treatment of acute poliomyelitis presents five problems for consideration: (1) The treatment of the acute onset; (2) the treatment of recovering paralysis; (3) the prevention of deformity; (4) the correction of deformity; (5) the treatment of residual paralysis.

The Treatment of Recovering Paralysis.

With the treatment of acute illness this paper is not concerned; its chief subject is the treatment of recovering paralysis, because I feel very strongly against the almost universal teaching and practice in regard to it.

Nearly every day some child is brought to the Orthopaedic Hospital with the history that two, three, or more years ago he had an attack of infantile paralysis and lost the use of one or both of his legs. He has been treated assiduously at some hospital by massage, electricity, etc., for eighteen months or two years. At first he seemed to improve, then the condition became stationary, and now he is brought to see if something more cannot be done, at least to enable him to walk.

These cases come in great numbers with almost identical histories, some with paralytic deformities, and some without. Their previous treatment has been massage always, electricity nearly always, exercises and removable splints sometimes. These measures I would condemn absolutely. I hold that it is quite unjustifiable to massage any limb that is recovering from infantile paralysis.

Acute poliomyelitis is a disease which produces paralysis of three grades: (1) Transient paralysis, which recovers rapidly in spite of any treatment; (2) a degree of paralysis which recovers slowly if it is properly treated; (3) permanent atrophic paralysis, for which no curative treatment is of any avail. It is almost characteristic of the disease that part of the paralysis recovers rapidly. It is the slowly recovering paralysis which requires treatment on account of the changes which occur in the affected muscles.

Now, during the time that a muscle is deprived of its nerve supply, being powerless to act or to resist action, it is easily affected by comparatively trivial circumstances. Such a muscle, for instance, is easily damaged by slight violence, and I believe that many paralysed muscles are so damaged by massage.

Much more important than this is the passive stretching to which paralysed muscles are subjected. Constantly it happens that a limb, or part of a limb, falls by its own weight, or is drawn by muscular action, away from the paralysed side, thus putting the paralysed muscles on the stretch. Now, a paralysed muscle that is stretched cannot recover until it is relaxed. So, to enable recovery to take place, the part must be fixed in such a position that the paralysed muscles are relieved of tension. Stretching does not merely delay the recovery of a paralysed muscle, but it inflicts upon it an injury which may undo whatever progress has already been made towards recovery. Thus, in a case of anterior tibial paralysis, if splints are applied intermittently, every time they are taken off and the foot is allowed to drop, a step back in the treatment is taken, and the recovery has to begin again. The fixation of a paralysed part must be continuous, and here it is that massage, electricity, exercises, and removable splints find their strongest contraindication.

As I have already said, these earlier cases of poliomyelitis come to the orthopaedic surgeon in considerable numbers, and nearly always after a more or less prolonged course of active treatment. For a long time past it has been my practice to put all such cases at once into plaster-of-Paris. The plaster is left on continuously for months at a time, and when it is necessary to change it the greatest care is taken to avoid any stretching of the paralysed muscles. In this way I have been able to obtain almost complete recovery in many cases, while in the majority of others there has been great improvement, even after they have been treated, sometimes for years, by massage, electricity, etc.

There may be hesitation in adopting this treatment for fear that extreme atrophy might occur under the plaster: but atrophy from mere fixation is absolutely negligible. As often as not, on cutting off a plaster after many months, a limb appears more plump than it was before, because the muscles have recovered their tone.

Some time ago I saw a child in whom a surgeon had transplanted tendons into the os calcis for paralytic talipes calcaneus. She was then able to raise herself upon her toes, and it seemed that the operation had been a great success. But on examination I found that, when she raised her heels from the ground, the calf muscles contracted strongly. Of course, the surgeon had kept the foot fixed for months for fear of straining the transplanted tendons. If only he had carried out his after-treatment without doing any operation at all he would have got just as good a result.

It has happened more than once that a surgeon has fixed a joint for so-called incurable paralysis—the knee, for example, has been fixed by excision or arthrodesis—and the muscles have recovered. In such cases, of course, the nerve cells in the spinal cord have recovered long ago, only the muscles have been unable to respond, because they have never been given a chance to recover. When the joint was fixed the muscles had their opportunity, and they took it, only to find that the joint had been needlessly destroyed.

About eighteen months ago there was under my care in the Royal National Orthopaedic Hospital a boy, aged 3½ years, with typical obstetric paralysis. This, of course, is not poliomyelitis, but the case is strictly analogous. He had atrophy of the deltoid and scapular muscles, fixed internal rotation of the arm, and no power of abduction at the shoulder-joint. The deltoid gave no reaction at all to either the galvanic or the faradic current. He was admitted for operation on the brachial plexus, but it was obvious that no operation on the nerves would be of any use unless the contraction at the shoulder could be overcome. So, under an anaesthetic, I stretched the arm out and put the boy's hand on the top of his head, and I fixed the arm there for something like six months. At the end of that time, rather to my surprise, the deltoid was able to contract, and it reacted both to galvanism and faradism. To be quite fair, I must say that the boy was not much better off, for though I divided the capsule and many of the tendons around the shoulder-joint, the internal rotation persisted. But, viewed in the light of an experiment on the deltoid, the result shows that recovery of a paralysed muscle is possible after three and a half years, if only it is kept continuously relaxed. Incidentally, I believe that to be the correct treatment, in the first instance, of every case of obstetric paralysis.

As a clinical experiment, nothing could be simpler than the putting on of a plaster-of-Paris splint, and I am convinced that if this method of treatment is given a fair trial it will be adopted as the routine in acute poliomyelitis in place of massage, electricity, exercises, and removable splints. If recovery is possible, it will occur to its fullest extent when the part is completely and continuously immobilized in a correct position; on the other hand, recovery may be indefinitely delayed, if not entirely prevented, by unnecessary interference.

Prevention of Deformities.

It is satisfactory to note that some physicians are now advocating the routine use of splints for this purpose. It should be taught in every medical school and clinic that, with few exceptions, a deformity in infantile paralysis is the result of neglect on the part of those who have been looking after the child. If a paralysed part is constantly allowed to drop into a faulty position, a deformity will result; if it is not allowed so to drop, no deformity will result. The prevention of paralytic deformities is, as a rule, so easy that there is no excuse for its neglect.

With regard to the splints themselves, there is only one fault to find—they can be taken off, and they are taken off, for massage, etc. For fixing a paralysed limb there is nothing like plaster-of-Paris, and, because it cannot be easily taken off, it not only prevents deformity, but it really helps to bring about recovery.

Correction of Deformities.

I only want to say here that an appalling number of cases come to orthopaedic hospitals having had tenotomies and other operations done, and these have to be done again, because the deformities have recurred. To do a tenotomy and not to follow it by proper after-treatment is like slapping a child in the face—it is a useless, needless injury.

The Treatment of Residual Paralysis.

This is a subject which really deserves some consideration by physicians and neurologists. When a group of muscles in the lower extremity remains permanently paralysed a support of some kind will almost certainly be needed, or a deformity will result from the part falling constantly into a faulty position. If a child is able to walk the weight of his body will surely aggravate the deformity; if he is unable to walk the treatment cannot possibly be considered complete until, at all costs, he has been set upon his feet.

There is need for co-operation between those who are responsible for the treatment of acute poliomyelitis in its early stages and those who have to deal with it later. These cases usually come under the care of the physician and neurologist first and under that of the orthopaedic surgeon later. Unfortunately, this sequence is not generally recognized; many physicians and neurologists frankly disapprove of orthopaedic treatment, being apparently quite unaware that the vast majority of cases of persistent infantile paralysis eventually drift into the hands of the orthopaedic surgeon. These cases come in a constant stream to orthopaedic hospitals after having been treated elsewhere. Unfortunately, most of them come in roundabout ways from entirely independent sources and nearly always after a period of neglect; their treatment is then begun all over again. It would be greatly to their advantage if the need for orthopaedic treatment were recognized early, so that it might follow at once on the cessation of medical treatment. Let the physician do what he can for them, then let him recognize that it is time for orthopaedic treatment.

The use of celluloid splints has been strongly advocated by some physicians and surgeons during the last year or two. These splints have been used simultaneously to prevent deformity and to take the place of walking instruments, and it has been held to be a great advantage that the child can walk about while the paralysis is recovering.

I believe this to be a great mistake. The very last thing that one wants is for a child to walk about during the early stages of poliomyelitis. The essential thing is complete rest for the paralysed muscles, and, however perfectly a splint fits, complete rest cannot be obtained while the child is walking about. Again, as I have said, these splints can easily be taken off, and they are invariably taken off, for active treatment of which I most strongly disapprove. A good thick plaster ensures complete immobility and non-interference in a way that nothing else does. A few months' inactivity does a child no harm, and to gain useful recovery of a paralysed muscle is well worth the temporary restraint.

When recovery is as complete as it can be, and not before, the question arises of a support to supplement the residual paralysis. And, inasmuch as it will probably have to be worn for many years, if not for the rest of the patient's life, it is best at once to give the child a support which can be adjusted as he grows, and which is strong enough to stand the wear and tear of daily use. Experience of the strain to which such instruments are subjected by these children makes it difficult to believe that a celluloid splint is a suitable appliance for this purpose. And, lastly, as celluloid splints are not adjustable, constant relays of new splints must be supplied if the child is to be kept properly fitted.

I have heard pitiful tales of poor little children weighed down by the burden of cumbrous steel instruments. Half an hour in the out-patient department of an orthopaedic hospital will dispose of that myth. A properly-made and fitted instrument should not be a burden to a child, and I have never yet seen a paralysed child who could be made to walk in a celluloid splint but who could not be made to walk equally well or better in an orthopaedic instrument.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

PELLAGRA.

THE following case came under my notice whilst acting as locumtenent at Llanidloes (Glamorgan):

A woman, aged 32, married seven years, with no children, had lived in a small cottage in the hills, five miles from Llanidloes, all her married life. She was never very robust, but had no illness till the summer of 1909. The first attack began with a "heat" rash, mainly on the forehead, under the eyes, over the nose and cheeks, slightly below and behind the ears, on the upper part of the neck, and on the back of the hands and wrists. The rash, at first very red and itchy, was followed by blebs, and finally peeling occurred. She felt ill after the rash was out, had vomiting and diarrhoea, and suffered from mental symptoms, for which she was treated in an asylum for six months (from October, 1909).

There has been a recurrence of the rash each summer, the time of its appearance varying with the amount of heat and sun. The distribution and course have always been the same, but she had experienced no mental symptoms since the first attack, and she had been getting progressively weaker, and for the last year had only been able to walk with a stick a short distance, owing to general weakness and her legs being "jerky." This year the rash appeared in the first week of July; vomiting and diarrhoea began about two weeks later. I first saw her on August 10th. She looked very ill and was much emaciated. The skin of the face was deeply pigmented and peeling, especially on the forehead, under the eyes, over the bridge of the nose, on the malar bones, and at the side of the neck. The lower part of the face and chin were quite clear; there was also very marked pigmentation and free desquamation on the backs of the hands and fingers and the wrists; the front of the wrists was also involved, but not the palms; the line between the pigmented area and clear skin was sharply defined and extended higher up on the radial side. The nails were not affected. The temperature was 98°, and the pulse 140. The tongue was quite clean, like raw beef. The abdomen was rather tense, very tender—indeed, hyperaesthetic all over. There was frequent retching and diarrhoea, but neither mucus nor blood was passed. She had severe cramps in the feet. The knee-jerks were very active, and ankle clonus well marked. The Babinski reflex was of the extensor type. There was no rigidity. There was some very slight lumbar spinal tenderness, but no muscular paralysis; the left pupil was rather larger than the right, though both reacted to light accommodation. She told me she had a very small "swallow." Articulation was slow and deliberate, but her mind seemed clear, though she was very querulous and exhausted, and so weak that she could not move herself in bed. She slowly but steadily improved in health, treatment being symptomatic; buttermilk agreed with her better than anything else. At the end of three weeks she could sit up in bed, and was fairly cheerful, and had evidently put on a good deal of flesh. Desquamation had then practically ceased, and the pigmentation was only faint, though still in marked contrast to the rest of the skin, which was naturally fair.

The case seems to be a typical one of pellagra. The rash recurring every summer, its evolution and symmetrical distribution and pigmentation, associated with acute gastro-intestinal symptoms, one attack of (stuporous) dementia, and affection of the nervous system, as shown in the reflexes, etc., can hardly point to anything else.

There is a small stream running down the hillside a short distance away; she has lived there for seven years, and always in this part of the country. I could hear of no other similar case in the district, but information was very difficult to obtain.

Hertford. L. R. LEMPRIERE, M.B.

TREATMENT OF KELOID.

KELOID, growing from the jewel holes in the tip of the ear in Indian ladies, is very common and disfiguring. All attempts to remove it by the knife make matters worse, for larger and more numerous growths are sure to follow. Some years ago I began treating these tumours by injections of formalin (40 per cent. paraldehyde) with uniform success. An Indian lady has just sent me the accompanying photograph of her right ear, on which was once a keloid the size of a large plum, which disfigured her very much. It will be seen that there is no sign of a recurrence, though it is four years since the operation. The treatment is very simple. Either induce local anaesthesia or give chloroform, as the injection process is painful. About twenty injections of about five minims each of formalin were made in this case at one sitting. The tumour was wrapped up in lint soaked in boracic lotion. In a week or so it had assumed the appearance and consistency of a piece of coke. It separated in about a fortnight. The dressing was changed daily. There was no odour at any time, nor any pain to speak of. Care must be taken never to inject the formalin subcutaneously, but always into the substance of the tumour only.

Portrush. JOHN SMYTH, Colonel, I.M.S.

PNEUMOCOCCAL INFECTION OF THE LUNG TREATED WITH AN AUTOGENOUS VACCINE.

JAMES D., aged 33, warehouseman, was admitted to Victoria Park Hospital on August 21st, 1912, when I was acting as house-physician to Dr. Colbeck. He stated that he had been well until three months earlier, when he apparently had an acute illness, the symptoms of which were cough, sharp pains in the right side and back of chest on coughing and breathing, fever, malaise, etc. He was in bed for three months, after which he got about his work for a little time; his cough, however, remained very troublesome, and was accompanied by copious expectoration of thick, offensive muco-pus, occasionally streaked with blood. Anorexia, loss of weight, insomnia, and heavy night sweats added to his discomfort. He was a well developed man, coughing frequently, with copious muco-purulent expectation, and experiencing some moderate dyspnoea. The temperature was 103°, the pulse 124, and the respirations 44; the tongue was covered with a thick yellow fur, and the breath was very offensive. Movement of the chest was poor, especially on the right side, the base of which scarcely moved at all. On measurement slight contraction of the right side was found, and the percussion note was impaired over the upper half of the right chest, back and front, with marked dullness below the seventh rib. Distant tubular breathing was heard over whole front of the right chest. It was very much diminished behind and practically absent at the base. There was a small patch of cavernous breathing at the angle of the right scapula, and scattered crepitations at base behind and in front. Vocal fremitus and vocal resonance were much diminished over the right side, and there was egophony and whispering pectoriloquy at the angle of the right scapula. The edge of the liver was felt about 1 in. below the costal margin in the right nipple line. Exploration of the right chest upon two occasions gave negative results. The sputum was examined on nine occasions. No tubercle bacilli were found, but a Gram-negative coccus—probably *Micrococcus catarrhalis*—and *Staphylococcus aureus* were present, while pneumococci were very abundant.

The patient was in the hospital for seven months and two weeks, and his subsequent history is as follows: Twelve weeks' treatment with creosote given: (1) On Yeo's mask, worn night and day; (2) inhalation in creosote chamber; (3) in a mixture containing creosote increasing to mxx dose, strychnine, iron, potassium iodide. Other inhalations, containing carbolic acid, iodine and pini sylvestris, were tried. During this time the temperature constantly fluctuated between 97° and 101°, being on one occasion 103.6°; the pulse-rate was equivalently raised, and the expectoration in twenty-four hours averaged 12 oz. (on one occasion 22 oz.), and was repulsively offensive; it was blood-stained on occasions, and there was once haemoptysis of 1 oz.

The patient suffered from profuse night sweats, loss of appetite, and progressive emaciation, his complexion becoming more and more cachectic and his spirits more and more depressed. His condition during the ninth week was one of extreme gravity, the expectoration being very profuse and the temperature rising one night to 104.2°, the patient being then in a state of profound collapse. The rises in temperature seemed to coincide with partial retention of the expectoration, for on several occasions the patient would cough up a small plug of solid mucus, after which the expectoration would become more profuse and the temperature fall. There was, however, no obvious change in physical signs.

At this stage it was decided to give him a course of autogenous pneumococcic vaccine treatment. The initial dose was 2½ million, and the dosage was continued thus:

First dose	... ...	2½ million.
In 3 days' time	... ...	5 ,,
In 3 ,,	... ...	10 ,,
In 3 ,,	... ...	20 ,,
In 6 ,,	... ...	40 ,,
In 6 ,,	... ...	60 ,,
In 6 ,,	... ...	50 ,,
In 7 ,,	... ...	100 ,,
In 7 ,,	... ...	100 ,,
In 7 ,,	... ...	100 ,,
In 7 ,,	... ...	200 ,,
In 7 ,,	... ...	200 ,,
In 7 ,,	... ...	300 ,,
In 7 ,,	... ...	350 ,,
In 7 ,,	... ...	400 ,,
In 7 ,,	... ...	300 ,,

After the third dose, and within ten days of the initial dose, the temperature ceased to fluctuate and remained perfectly steady and normal. Within fourteen days the patient began to get up; appetite improved; weight was put on, and the amount of expectoration became steadily less and averaged about 4 oz. until his discharge. The temperature remained perfectly steady and normal, and the patient felt slight effects from the vaccine on one occasion only—namely, slight headache, malaise, rise of temperature, and staining of sputum.

The air entry into the right lung improved in an extraordinary manner, and the patient was discharged on August 18th, 1912, fifteen weeks after the commencement of the vaccine treatment, very greatly improved in all respects.

I hear from the patient that his condition up to now has remained as good as when he left the hospital.

London, N. C. G. WHORLOW.

Reports
ON
MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

PRESTON ROYAL INFIRMARY.

A CASE OF HIRSCHSPRUNG'S DISEASE.

(Reported by W. A. H. McKERROW, M.B., Ch.B. Aberdeen, Resident Surgical Officer.)

THE patient in the following case, a boy aged 16, was admitted suffering from enormous tympanitic distension of abdomen. His history was to the effect that ever since the age of 9 months he had been more or less troubled with constipation. Sometimes he would go for two or three weeks without a proper motion, and at such times his abdomen would get distended. At one time, about ten months before admission, he had been as bad as at present; on that occasion the distension suddenly disappeared, with much passage of stools and wind per anum, within the short period of half an hour. So long as his bowels were kept open with medicine and injections (administered by his mother), his abdomen was not much bigger than normal.

The present attack came on about a week before admission, and for the last few days patient had vomited frequently.

Condition on Admission.—The patient, an intelligent but somewhat undeveloped lad, complained of pain across his abdomen. The temperature was 98° F., the pulse 116, and respirations 24 per minute. The tongue was clean, the lips cyanosed, and expression pained and anxious. There was marked oedema of the legs and lower part of the abdominal wall.

The abdomen was enormously distended and resonant to percussion. The superficial veins were prominent; no visible peristalsis was seen; liver dullness was not found.

The apex beat was in the second intercostal space, 2½ in. from the middle line, and a presystolic murmur was heard on auscultation.

The urine was deeply bile-stained, and gave a marked indigogen reaction; it contained no albumin nor sugar.

Per rectum, hardened faeces were felt anteriorly, covered by a fold of mucous membrane, forming a hard transverse ridge. No obstruction was felt apart from this.

Treatment.—Enemata of turpentine and of olive oil were administered, but without result. A rectal tube was passed, but failed to relieve. An exploring needle was passed into the ascending colon posteriorly, but no gas came away; on withdrawal the needle was found to be blocked with soft faecal matter. Some hardened faeces of putty-like consistence were removed digitally from the rectum; this procedure gave the patient so much distress that it was not continued.

Progress and Result.—On the second day after admission an incision was made, under local anaesthesia, at the right iliac region, with a view to appendicostomy or caecostomy. Small intestine presented at the wound, however, and it was found impossible to proceed further with the operation. A Paul's tube was inserted into a loop of small intestine, but no relief followed. Later on more faeces were removed digitally from the rectum, and after a while the patient began to pass soft motions. He gradually sank from exhaustion, however, and died on the fifth day after admission.

Post-mortem Examination.—On opening the abdomen in the middle line a loop of sigmoid was found occupying a median vertical position, enormously dilated and thickened in proportion. On withdrawing this loop the appearances presented in the photograph were noted. The dark patch seen on the sigmoid was a bile stain, and serves to indicate that portion of the sigmoid which was in contact with the gall bladder before the relations of the viscera were disturbed.

The dilatation was greatest at the sigmoid flexure, which measured 21 in. in circumference at its widest part. The transverse colon was markedly enlarged; the ascending colon was almost normal below, and gradually became dilated towards the hepatic flexure. The rectum was dilated to about the same degree as the transverse colon. There was no peritoneal congestion nor inflammation, and no free fluid.

No obstruction was found. The small intestines appeared to be normal. The diaphragm reached as high as the second intercostal space on the left side. The liver was adherent to the diaphragm over the surface of its right lobe.

On opening the dilated colon it was found to be full of soft, porous, dark-brown faeces. There was very little accumulation of gas. At one part of the mucous surface of the sigmoid there was a stercoral ulcer of oval shape, 2 in. by 1 in., surrounded by minute haemorrhages into the mucosa. On dissection, the muscular layers of the colon were found to be enormously hypertrophied.

A more complete *post-mortem* examination was not performed in deference to the wishes of the relatives.

REMARKS.

The case appears to be a fairly typical one of the rare condition commonly known as Hirschsprung's disease. Mummery found, in a study of 100 collected cases, that the disease was commoner in males than in females—in the proportion of three to one; that in the great majority the symptoms dated either from birth or from a few months after birth; that in over 75 per cent. no obstruction was to be found *post mortem;* and that in 80 per cent. the sigmoid flexure was the part chiefly involved.

Non-operative treatment relieves the condition, but does not cure. Some cures have followed resection of the affected portion of colon, and appendicostomy has had a good result in at least one case. In a case subjected to resection by an American surgeon recurrence followed; resection was again performed, with good result.

When the faecal accumulation is very great and obstructive symptoms are present, as in the case described above, it may be a matter of the greatest difficulty to relieve the patient, either by operative or non-operative treatment. The latter appears to be, if anything, the more hopeful. The ultimate prognosis is bad.

I am indebted to Dr. F. W. Collinson, honorary surgeon to the infirmary, for permission to publish this account of the case.

Reviews.

CUNNINGHAM'S "ANATOMY."

THE fourth edition of *Cunningham's Textbook of Anatomy*[1] has been guided through the press by Professor ARTHUR ROBINSON, and although changes in authorship of several of the articles have become necessary, a high standard of excellence has uniformly been maintained. In some cases, indeed, articles have been improved, with the result that the work stands unrivalled as a textbook of anatomy, both as a work of reference and for general reading.

Since the appearance of the third edition, in 1909, two of the original contributors, Professor Cunningham and Professor A. H. Young, have died, and although every section in the book has been revised, it is in the articles originally contributed by them, and in the article originally written by the late Professor Birmingham, that the more important changes are noticeable. The new contributors include Professor G. Elliot Smith, Professor R. J. Berry (Melbourne), Professor A. C. Geddes (now of Montreal University), and Professor D. Waterston (London).

We notice with pleasure the changes in the article on embryology, contributed by the editor himself. As it stands, it is, on the whole, a most finished account of the general phenomena of the pre-natal period of development. We should, however, have liked to see some reference to the work which has been done by Wilson, Guyer, and others on "sex chromosomes." Guyer, indeed, claims to have found two types of spermatozoa in the human subject, which, if confirmed, must have a profound influence on our ideas concerning the causation of sex.

Professor Elliot Smith, as one would expect, has in a masterly way brought the article on the nervous system thoroughly up to date. Whilst preserving unaltered the general character of the late Professor Cunningham's article, he has made considerable alterations necessitated by the rapid progress in knowledge of the brain. The new figures which he has introduced, particularly those illustrating the cortical areas, the association bundles, and the development of the corpus callosum, will be much appreciated by students.

Professor Waterston has greatly added to the usefulness of the article on the diges ive system by some fine illustrations, many of them in colour. We are pleased to notice also four drawings of the form of the stomach (empty and filled) as seen by the *x* rays, and we are convinced that students, if they are to obtain a satisfactory knowledge of the form of the stomach, should be taught, during their anatomy course, the form of the organ as seen in the dissecting room and as seen in the living subject by means of *x* rays.

There are very many other improvements in the book which need not be referred to in detail, such as the account of the lymphatics by Professor Robinson, the gradually increasing use of skiagrams, and the description of the chromaffin organs by Professor Geddes. The book is a mine of information on the anatomy and the development of the human body, and we warmly congratulate Professor Robinson on the great success he has achieved on assuming direction of this well-known work.

[1] *Cunningham's Textbook of Anatomy.* Edited by Arthur Robinson. Fourth edition. London: H. Frowde, and Hodder and Stoughton. 1913. (Sup. roy. 8vo, pp. 1,621; 1,124 figures, 2 plates. 31s. 6d. net.)

KEEN'S "SURGERY."

THE title on the back of Volume VI of Keen's *Surgery*[2] is "The Newest Surgery." Here in three words we have the key to the contents of the book. In the preface we are told that the five volumes originally contemplated in this System of Surgery were published between 1906 and 1909. Although the length of time from the first of these dates to the present year is not long, yet it is long enough to render much of the material of that date obsolete, or at least the better for revision, and to demand the inclusion of all that is new. The chapters in this volume are to be regarded as supplementary, and are intended to bring the work quite up to date. They are written mostly by the authors of the original volumes. New material is contributed by the workers most fitted to deal with it; for instance, "Anoci-association" is by Crile, "Intratracheal Insufflation" is by Meltzer, "Parathyroids" is by C. H. Mayo. Opinion may differ as to the wisdom of including in a work which purports to be a "system" much that still is experimental, that cannot yet be regarded as belonging to surgical practice. The editor acknowledges that he has recognized the difficulty, and he has solved it boldly enough by incorporating some experimental work which has not yet been tried on man. In a short paper from his own pen, entitled "Note on the Treatment of Mouse Cancer by Eosin and Selenium," he shows that he believes that the work of Wassermann and others, following the lead of Ehrlich, in endeavouring to destroy cancerous tumours in the mouse by injection into the blood stream of a compound of eosin and selenium, may lead to results of importance in the treatment of human cancer, though nothing so far has been achieved.

Similarly much of the newer work on thoracic surgery may still be looked upon as experimental, or at all events conviction as to methods has not been established. Great advances in thoracic surgery have been seen during the last five years. Sauerbruch's enthusiasm for the negative pressure cabinet in operations requiring opening of the pleural cavity has resulted in the adoption of the negative pressure method all over the Continent of Europe and the building of expensive apparatus, and in his hands exploratory thoracotomy has become as safe and as easy as exploratory laparotomy. But we now hear Meltzer and Auer and Elsberg say that by intratracheal insufflation of ether and air they can dispense with these expensive positive and negative pressure apparatus; and Macewen holds that these apparatus are not necessary, because molecular cohesion and not atmospheric pressure is the force that prevents collapse of the lung. So that in this department of surgery settled convictions do not prevail, though it is right that a volume dealing with the "Newest Surgery" should tell of everything that helps progress.

It is inevitable that inequalities and great differences in style should be found in such a book as this. Each writer has a style and method of his own, subject to the watchfulness of the editor. But there is practically no overlapping. Some subjects receive too much space—the appendix occupies 40 pages—and some too little; the surgery of the brain has been omitted altogether. The versatile J. B. Murphy writes the chapter on the appendix, and makes the subject as interesting as if it were all new. Tuberculosis and actinomycosis of the appendix are fully described and illustrated. Pictures of Murphy's four methods of diagnosis are introduced: Fist percussion of kidney, hammer stroke percussion of gall bladder, deep grip palpation of gall bladder, and piano percussion for small quantities of exudate in the peritoneal cavity. Rovsing's sign for appendicitis is now held by many surgeons not to be reliable. The value of Sondern's polymorph percentage method in the diagnosis and prognosis of appendicitis is extolled on the ground that the percentage of polynuclear cells represents the efficiency of the systemic defence against virulent infections rather than an indication of the virulence of the infection. W. B. Coley writes on hernia, and says that the Bassini operation is that universally practised. Mayo Robson's chapter on gastric surgery brings up to date a rapidly changing subject. It is extremely valuable for the introduction of an illustrated section on the lymphatic system of the stomach and its bearing on gastrectomy.

We have indicated, we hope with sufficient clearness, that the title, "The Newest Surgery," is amply justified, and we think that this volume will receive the same warm welcome accorded to its predecessors. Incorporated with it is a general index to the complete work, itself a volume of 120 pages, and an index to the present volume as well. The whole book is fully illustrated, without superfluity, and beautifully printed. The bibliography attached to each chapter is a feature which investigators and writers of papers will gratefully accept for their own use.

We are glad to offer the editor our warmest congratulations on the successful completion of a great task, which though not entirely by American surgeons, is really a magnificent monument to American surgery.

[2] *Surgery: its Principles and Practice.* By various authors. Edited by Wm. Williams Keen, M.D., LL.D., Emeritus Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia. Volume VI. Philadelphia and London: W. B. Saunders Co. 1913. (Roy. 8vo, pp. 1177; 519 illustrations, some coloured. 30s. net; half morocco 34s. net.)

CLINICAL PATHOLOGY AND BACTERIOLOGY.

DR. BERNSTEIN'S book on *Applied Pathology*[3] is not a technical treatise for the pathologist, but is intended to equip the general practitioner with an appreciative knowledge of the nature, purpose, and utility of the work of a clinical laboratory. It is, he informs us, a reproduction of the lectures on clinical pathology which he has delivered to the students of the West London Post-Graduate College. His book gives the impression that he possesses the art of stimulating the interest of his students and inspiring their confidence, and we cordially approve of his endeavour to bridge the gap between the practitioner and the pathologist. It is much to the advantage of the former that he should be versed in the technique of the simpler laboratory operations, and should also possess a good general knowledge of the methods and meaning of the more complicated procedures which he has not the time, facilities, or training for carrying out himself. It is equally desirable that the pathologist should be required to justify the opinions which he forms as an expert to the physician or surgeon who is prepared both to demand and to appreciate the why and wherefore. But this implies that the clinician must take pathology seriously. He must not imagine that attendance at a course of lectures, or their perusal when published in a book, is the completion of his education; he must always be prepared to learn, and must not fancy that his preliminary enlightenment places himself in the superior position of critic over the pathologists whom he may consult. We have no doubt that Dr. Bernstein shares this view, but we think he is injudicious, for the purpose of his present book, in his free indulgence in caustic criticisms of schools and methods of clinical pathology which meet with his disapproval. He describes "that new product, the vaccinist," as "a man often young and lacking experience, trained for a few months at the fountain head, and treating disease about which, owing to his inexperience, he can know but little, with a few chosen bacteria with which he has familiarized himself." He refers to the growing fashion "of consulting Wassermannites, men who will have every blood tested for syphilis; vaccinists who will have every disease and condition, from boils to abortion, treated with vaccine," and so forth. He complains that "trained medical graduates" are compelled "to wear themselves out daily cutting sections of tissues and enumerating blood corpuscles, so that in time we feel they must degenerate into 'hewers of paraffin and drawers of blood.'" We confess it is refreshing to find a man who holds strong opinions and expresses them vigorously, but when he thirsts to do battle as an iconoclast he might perhaps find a more appropriate arena. Dr. Bernstein should deliver these stalwart criticisms before a meeting of one of our pathological societies; then there would be excellent sport, with plenty of hard hitting on both sides, and our applause would be reserved for him who hit most effectively. But apart from this the book is one which may be strongly commended as a guide to the newer applications of pathological methods to the elucidation of clinical problems.

It frequently happens that guide-books such as *Clinical Bacteriology and Haematology for Practitioners* belie

[3] *Applied Pathology: Being a Guide to the Application of Modern Pathological Methods of Diagnosis and Treatment.* By Julius M. Bernstein, M.B.Lond., D.P.H.Camb., M.R.C.P. London: H. Frowde, and Hodder and Stoughton. 1913. (Demy 8vo, pp. 410; 5 plates, 46 figures. 10s. 6d. net.)

their titles; they are said to be written for students or for practitioners, and yet it is soon evident that no student and, in ordinary circumstances, no practitioner could ever carry out the investigations described within their covers. This certainly need not be said of Dr. EMERY's book.[4] We have never read a book which more faithfully fulfils its purpose. Not only are the facts correct, but there is an individuality about the book which stamps the author as a master of his subject and a most practical teacher. Nor is the book a mere compendium of laboratory methods, for Dr. Emery never loses an opportunity to place before the worker the bearing of this or that investigation on problems of clinical moment. Not only does the author provide instruction on clinical bacteriology and on haematology, but a section will be found dealing with the examination by cyto-diagnosis, and a section is given on p. 95 containing an admirable description of Wassermann's reaction and its interpretation. Herein it may be felt that the author has strayed from his intention to describe only what is possible at the hands of a practitioner, but he may be excused on the ground that the reaction is of such importance that no practitioner can afford to be ignorant of its mechanism and its interpretation.

The plan of Professor BLUMENTHAL'S work on the special pathology of the urine[5] differs from most books on this subject by being a description of the alterations met with in the urine in various diseases and other conditions, as, for example, in infections, in hunger, in metabolic disorders, in malignant growths, in blood diseases, diseases of the stomach and intestines, liver, nervous system, organs of the circulation and respiration, female pelvic organs and the kidneys. It is a complement to his book on the general pathology of the urine which was published ten years ago. It is not a textbook but a work of reference, and is undoubtedly a storehouse of information containing a collection of notes gathered from medical publications. Professor Blumenthal seems to have relied mainly upon books published in German, such as various yearbooks, for his knowledge of foreign contributions, and in this respect his volume is somewhat deficient. Moreover, such material accumulates rapidly, so that all that can be said of the book is that at the time of publication it was a valuable attempt to gather together in one volume a vast mass of scattered material.

The Bakteriologisches Taschenbuch[6] of Dr. RUDOLF ABEL is a very comprehensive practical short handbook for the bacteriological laboratory. After discussion of the microscope and of methods of sterilization and disinfection there are articles on nutrient material and cultivation methods and on staining methods. Then follows the longest section in the book, giving instructions for the recognition of the bacteria most commonly met with in pathology. This is followed by an article on the method of obtaining material, such as blood, pus, cerebro-spinal fluid, and various excretions, and a note upon the experimental injection of animals. There are sections on bacterial examination of water, air, and soil, and of methods of preservation. The volume is interleaved, and has a good index; it is likely to be extremely useful to those who read German. It was first published in 1889, and the new edition is the seventeenth.

THE STATE PROVISION OF SANATORIUMS.

THE practical value of sanatoriums is not universally recognized, but it must be admitted that much of the adverse criticism has proceeded from those who cannot claim to have had practical experience of their working.

The reports and opinions emanating from medical officers of these institutions go to prove that their influence is far-reaching, and that it works for the general good of the community as well as for the present benefit of the individual. It has very often been hinted, and sometimes freely stated, that much of the apparent success of sanatorium treatment may be attributed to imperfect diagnosis, and that the cured cases are, for the most part, those who are not suffering from tuberculous disease at all. But it is now generally admitted that the vast majority of civilized persons, and especially of town dwellers, become the hosts of the tubercle bacillus during the first few years of life, and that its subsequent development depends very largely upon preventable causes. It is upon these outside influences, rather than upon the virus itself, that attention should be concentrated, and it is thus of the first importance that every one concerned should become practically acquainted with the recognized means of avoidance of such conditions.

The treatment of the potential tuberculous subject in a sanatorium cannot fail to be of service in his later surroundings, if only by the educational advantages which it supplies. Not less necessary is it that the average practitioner, who must be constantly called upon to undertake the care of the tuberculous patient, should have something more than a theoretical acquaintance with sanatorium methods. So important is this regarded in one foreign country, at least—Norway—that in the county of Bergen a system has already taken shape whereby the expenses of general practitioners are paid for a definite period while they acquire a first-hand knowledge of sanatorium treatment in some recognized institutions.

The present position of the State sanatorium question and the difficulties which surround its administration are well set forth in a recent work[7] by Dr. S. V. PEARSON, who brings the results of extensive experience to bear upon the problem. To the man in the street the State provision of sanatoriums and their association with hospitals, would no doubt appear a simple matter—only a question of money. But to those who have made a study of the subject the obstacles to smooth working are many, and are only to be overcome by consensus of good feeling and unselfish co-operation between the many interests which must of necessity be affected. The family doctor, the medical officer of health, the tuberculosis officer, and, lastly, the sanatorium or hospital official, are all concerned sooner or later. It falls to the lot of the medical officer of health to trace out the exact causes that may have contributed to light up the latent disease, and the information so obtained by him should be at the disposal of all the other co-workers, and each in his respective sphere should be adequately paid for the public work which he does. Dr. Pearson in his book, which we can commend to the notice of all administrators of tuberculosis schemes, does not favour the system, in vogue in most hospitals, by which the honorary officer works in association with paid assistants. His ideal sanatorium should contain not more than seventy-five beds and be managed by a head doctor with two assistants, all sufficiently well paid to command the services of well skilled men. High salaries to reward the best quality of service will, he believes, in time to come, be regarded as money well spent. The manager of a sanatorium should be allowed to exercise autocratic powers, subject only to the advice of a medical advisory board. He must superintend the educational side of sanatorium life and encourage the attendance of general practitioners who may be required to carry out home treatment on special lines. The temporary admission of patients who may be about to undergo such home treatment is also highly desirable, but it can only be carried out by the hearty co-operation of the head officers of sanatoriums, willing to give up beds, time and attention to cases that pass too soon out of their jurisdiction.

ENGINEERING AND HYGIENE.

EVERYONE knows something of the great Assouan Dam; of the smaller but still very remarkable engineering schemes which supply Liverpool and Birmingham with water; of irrigation works in India, and of the Suez and Panama Canals; of the Forth Bridge and the Brooklyn Bridge; the public, when invited to witness the opening of some great engineering work, is not grudging in expressing its admiration for the conception of the scheme and the

[4] *Clinical Bacteriology and Haematology for Practitioners.* By W. D'Este Emery, M.D., B.Sc.Lond., Director of the Laboratories and Lecturer on Pathology and Bacteriology, King's College Hospital; formerly Hunterian Professor, Royal College of Surgeons. Fourth edition. London: H. K. Lewis. 1912. (Demy 8vo, pp. 289; 10 plates, 50 figures. 7s. 6d. net.)

[5] *Handbuch der Speziellen Pathologie des Harns.* Von Dr. Med. Ferdinand Blumenthal. Berlin und Wien: Urban und Schwarzenberg. 1913. (8up. roy., pp. 500. Paper, Mk. 15; bound, Mk. 17.)

[6] *Bakteriologisches Taschenbuch.* Von Dr. Rudolf Abel. 17 Auflage. Würzburg: Curt Kabitzsch. 1913. (Pott 8vo, pp. 144. Mk.2.)

[7] *The State Provision of Sanatoriums.* By S. V. Pearson, M.D. Cantab., M.R.C.P.Lond.. Cambridge: The University Press. 1913. (Med. 8vo. pp. 88; plans for sanatorium for 250 patients. 3s. net.)

efficiency with which the completed construction works. But it has few opportunities of watching the process of construction or of appreciating the difficulties which the engineers and contractors have had to overcome. When details are given we are told of cubic yards excavated, or millions of gallons of water held up; of steam dredgers or steam shovels, but very little about the workers. It is the particular merit of the book, *All About Engineering*,[8] which Mr. GORDON D. KNOX has written, that the human side is put in proper perspective. To carry through a big engineering work demands of the engineers and contractors not only skill in design and in construction, and wide knowledge of the materials used, but very high powers of organization; to build a skyscraper against pressure of time, or the Assouan Dam, which had to reach a certain stage before the Nile flood came down, or to complete a bridge in spite of storm and cold, means the employment of a very highly organized body of workmen. The contractor has to establish a village or a small town, as the case may be, and everything must be managed to go like clock-work. The keynote of the book is the need for organization, and the most striking illustration of the principle is afforded by the Panama Canal, where the engineers had to devise a scheme not only to meet the gigantic scale of the work, but the special obstacles created by the prevalence in the country of diseases the causes of which were unknown to de Lesseps. The success of the American enterprise is due primarily to the advance in knowledge of tropical medicine and hygiene, the thoroughness with which the engineers assimilated their lessons, and the strictness with which the regulations founded on them were enforced.

An instance from a different aspect of the relation of engineering to hygiene is afforded by the account Mr. Knox gives, in a chapter on the breaking up of virgin soil, of the use of huge steam ploughs for draining a pestilential swamp in Algiers. The plough turned over a huge slice of muddy, weed-matted soil, and the furrow remained as a drain. In a year or two the marsh was growing oats. The book contains chapters on the testing work of the National Physical Laboratory, on gyrostats, on lighthouses, on railways, including aerial and mountain, and on many other subjects. It is addressed to boys, but it contains a great deal which their elders will find interesting.

SURGERY.

WE have received the following letter from Mr. Ernest Maylard, a review of whose book was published on September 13th, p. 675:

Maylard's "Practice and Problem in Abdominal Surgery."

SIR,

It is not usual and, as a rule, not expedient to call in question the criticisms of one's reviewer, and I should not have considered it worth while to do so on the present occasion except for one remark which occurs in the notice you give of my book in last week's issue. It is, I think, usually considered a breach of privilege on the part of an unnamed critic to cast any aspersions upon the work under review without justifying the same by giving adequate quotations. If, as my reviewer states in his concluding remarks, "parts of the work may be described as old-fashioned," I should have deemed it courteous, if not merely fair, to have stated specifically what these parts were. To those who know my work such information will go for what it is worth; to those who do not the casting of such an unsupported slur is liable not only to condemn the book—for who, nowadays, wants "old-fashioned" surgery?—but to reflect adversely upon the ability and reputation of the writer. The citation of concrete examples would have allowed the reader to judge whether what the reviewer considered "old-fashioned" might not, after all, be preferable to some of the more recently introduced and expressed methods and opinions.

In view of the fact that my publishers two months ago informed me that more than half of the present edition is already sold, I should have deemed it particularly felicitous on the part of my reviewer had he kindly enlightened me on the delinquencies of my "old-fashioned" work, so that, in the possible event of a second edition being called for, I might—although it is more than likely I should not have considered it advisable—correct some of my antiquated methods in accordance with the more modern and up-to-date practices and opinions of my reviewer.—I am, etc.,

A. ERNEST MAYLARD.

This letter was referred to the reviewer, who sent the following note in reply:

Mr. Maylard, from his letter, concludes that what is old-fashioned is necessarily bad; this of course, does not always follow. He complains that these parts have not been specifically indicated, and thus a breach of privilege committed; but if Mr. Maylard will read the review again he will find mention of the non-use of gloves, that his clean cases are kept in bed for four weeks, that he has had no experience of the use of wire filigree, etc.; thus in the review examples are quoted which lead up to the statement objected to by Mr. Maylard, though whether these methods are preferable to those more commonly practised by abdominal surgeons is left entirely to the reader.

Mr. Maylard wrote as follows on September 20th, 1913:

I am obliged to you for submitting to me the reply of my reviewer to my letter to you of the 13th inst. It is quite a relief to me to ascertain upon what a slender basis his adverse criticisms rested. "Gloves," "four weeks' rest in bed," "wire filigree," and the unfortunately unexplained "etc." are all questions—with the exception of the unknown quantity—which will be found impartially considered in my book. I would ask any who might deem it worth their while to do so to refer to pages 50, 62, and 69, to learn how unfair are the inferences drawn by my reviewer regarding my practices and opinions.

On reference to the pages indicated by Mr. Maylard we find with regard to gloves the following observations:

(P. 69.) The use of rubber gloves for ordinary aseptic abdominal operations brings one on to very debatable ground. It is, however, essentially a question of individuality. If an operator considers he is himself safer to use gloves, and can by their constant employment exercise the necessary dexterity and expeditiousness, he is certainly right so far as he is personally concerned. And if, on the other hand, an operator abjures the use of gloves, it must be because, in the first place, he is satisfied he can efficiently sterilize his hands, and, in the second place, because he feels that his manipulative powers and his sense of tactile impressions are greater than when his hands are covered. As both classes claim equally good results, there is no cause for one to cast reflections or adverse criticisms on the other.

As to four weeks' rest in bed, we find the following under the prevention of herniae of the abdominal parietes:

(P. 51.) My rule is to maintain the patient at rest for four weeks in cases where the wound has healed by first intention; but when healing has been by granulation, the result of some of the causes already mentioned, detention in the recumbent position for six weeks or longer is enforced. This rule, however, is not without its exceptions.

With reference to wire filigree, Mr. Maylard's observation is:

(P. 62.) I have no experience of the use of silver-wire gauze in the treatment of some forms of intractable abdominal hernia, but from the success which seems to have attended its employment in the practice of some surgeons, it is worthy of notice. The gauze is embedded in the tissue of the parietes in such a way as to prevent, by its supposed non-giving character, protrusion through an aperture incapable of occlusion by the natural tissues.

NOTES ON BOOKS.

THE whole of the second part of vol. vii of the *Annals of Tropical Medicine and Parasitology*, issued by the Liverpool School of Tropical Medicine, is occupied by the final report of the Luangwa Sleeping Sickness Commission of the British South Africa Company. The Commission began its work at Nawalia in the Luangwa Valley in 1911 in consequence of the establishment of the fact that sleeping sickness occurred in parts of Rhodesia and Nyasaland where *Glossina palpalis* did not occur. The Commission quickly established the fact that *G. morsitans* was the vector of the human trypanosome, and that a considerable percentage of game and of "wild" *G. morsitans* are infected with the parasite. The results of the Commission have already been published from time to time, but they are brought together in this number of the *Annals*, and convenient summaries are appended to its several sections. One of the conclusions is that *T. rhodesiense* is widely distributed throughout South Central Africa, and that there is no essential difference between the clinical manifestations of the disease

[8] *All About Engineering*. By G. D. Knox. A book for boys on the great civil and mechanical engineering wonders of the world. London: Cassell and Co., Ltd. 1913. (Demy 8vo, pp. 382; 39 illustrations. 6s.)

in man caused by *T. rhodesiense* or *T. gambiense*, except that the former possibly possesses greater virulence. *G. morsitans* in nature has been found to transmit the human trypanosome, and the antelope is the chief reservoir; examination for the human trypanosome of the blood of a large number of monkeys, wild rats, and mice, was negative. It was clearly established that the developmental cycle of *T. rhodesiense* in *G. morsitans* was influenced by the temperature; temperatures below 70° F. being unfavourable. On the other hand, the parasites may persist in the fly at an incomplete stage of their development for at least sixty days. The fly is only infective when the salivary glands are invaded, and this invasion is secondary to that of the intestine. The first portion of the developmental cycle takes place in the gut of the insect, and it is believed that invasion of the salivary glands only occurs when there is a high mean temperature of 75 to 85° F. These earlier sections of the report are written by Drs. Allan Kinghorn and Warrington Yorke; the concluding section, which is written by the entomologist Mr. Llewellyn Wood, contains an illustrated record of the observations of the breeding places of *G. morsitans*. The pupae were found chiefly in hollows in trees or under decayed branches and also in holes in the earth, and were usually hidden under a slight covering of earth or dead leaves. None was found at the bases of healthy trees or under bushes. Mr. Lloyd concurs with the opinion previously expressed by Jack that the pupae are deposited in such positions that they are not likely to be scratched up by game birds. Of the 54 living pupae found, 45 (90 per cent.) were so placed that they would be daily warmed by the sun. These observations were made in the coldest part of the year, and indicate that in shady positions the periods of pupation would be prolonged even if the pupae survived.

The well known publishing firm of Baillière et Fils of Paris are at present engaged in bringing out, under the supervision of Drs. Gilbert and Carnot, a series of twenty-eight volumes dealing with therapeutic agents and methods, and written by the highest authorities. The volume on the therapeutics of the infectious diseases, by Drs. GARNIER, NOBÉCOURT, NOC, and LEREBOULLET,[1] is the eighteenth of the series. Some idea of the book will be given when we say that it consists of upwards of 600 somewhat closely-printed pages, and that it is divided into five main parts. Of these the first deals with the treatment of infectious diseases, considered from a general point of view, and gives an excellent account of the principles upon which the modern treatment of these diseases is based. Then follows a section on the treatment of infectious diseases in children; in this section acute rheumatism and syphilis are included. The third division is concerned with exotic diseases, and in its scope are comprised not only the strictly infectious diseases, but also those which are caused by filariae and fungi and by intoxicants—for example, beri-beri and snake-bites. In the fourth portion the treatment of tuberculosis is discussed, while in the fifth and last part is set forth an account of the treatment of infectious diseases (excluding venereal diseases) as they are met with in adults. This arrangement of the work almost unavoidably leads to a certain amount of overlapping; it is, however, slight. The methods of treatment are explained very concisely and clearly, but yet in some detail. Nothing of importance has been omitted. On the other hand, the reader's time is not wasted by accounts of methods which are only speculative and not based on ripe experience. Altogether the book can be thoroughly recommended as a full and trustworthy guide to the treatment, prophylactic as well as remedial, of the infectious diseases.

Alimentary Enzymes in Theory and Application, with Special Reference to their Use in Treatment and Dietetics,[2] in spite of its rather pretentious title, is a very good and unpretending practical guide. It is published by the Benger's Food Company, Limited, and is, of course, largely designed to impress upon readers the value of the preparations of that company. At the same time the subjects are dealt with in a reasonable and practical spirit, and there is an absence of excessive claims. It is very largely concerned with infant feeding, and is well worthy of attention.

[1] *Thérapeutique des maladies infectieuses.* Par les Drs. M. Garnier, Nobécourt, Noc, Lereboullet. Paris: Baillière et Fils. 1913. (Post 8vo, pp. 694; 19 figures. Fr. 12.)

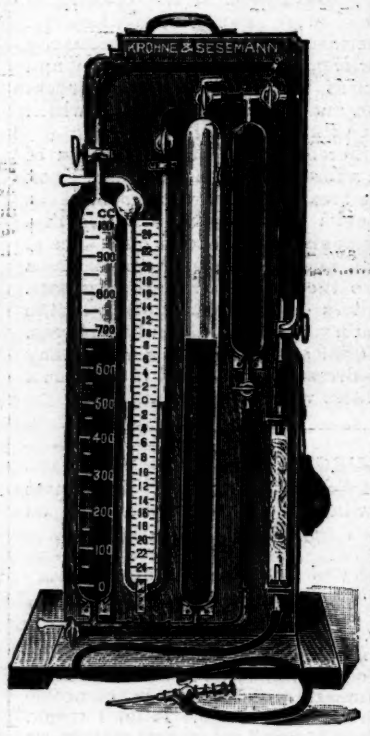
[2] *Alimentary Enzymes in Theory and Application, with Special Reference to their Use in Treatment and Dietetics.* Published by Benger's Food Limited, Otter Works, Manchester, England. 1912. (Med. 8vo, pp. 123: 10 plates, 2 figures.)

The latest volume issued of the series, *Questions Biologiques Actuelles*, edited by Professor DASTRE, is one on *La Sécrétion Pancréatique*,[3] by Dr. TERROINE. The author, after discussing the evidence for and against the existence of a reflex nervous mechanism controlling the pancreas, concludes that the humoral method of excitation—by secretion—is undoubtedly proved, while no trustworthy positive evidence of the other is to hand. While secretin acts directly on the pancreatic cells, the nature of this action is still wholly unexplained, and so, too, is the nature of secretin itself. The methods of obtaining the juice and the historical evolution of these methods are described, together with the relation of the secretin to the food eaten—Pawlow's work and that of his school—the discovery of secretin by Bayliss and Starling, and the modes of its formation and action. An excellent bibliography is added to this monograph.

MEDICAL AND SURGICAL APPLIANCES.

Apparatus for Introducing Gases into the Pleural Cavity.

MR. H. MORRISTON DAVIES (London, W.) writes: Hitherto, when injecting gases into the pleural cavity (either nitrogen in order to collapse the lung in cases of phthisis, or oxygen to allow of the complete removal of an effusion) I have used Dr. Kornmann's apparatus with my own needle.



This apparatus I have found to be very convenient and satisfactory so long as the amount of gas required does not exceed 500 c.cm. If, however, more gas is required it is necessary either to refill the cylinder or to displace the remaining gas by pumping. Now, the only method of allowing a slow and perfectly steady stream of gas to enter the pleural cavity is to displace that gas by the weight of a column of liquid; I have therefore made certain modifications in Dr. Kornmann's apparatus so as to be able to displace by the weight of water alone 1,000 c.cm. of gas at one sitting. This apparatus, which has been made for me by Messrs. Krohne and Sesemann, is shown in the accompanying illustration. The left-hand cylinder is graduated, and when ready for use is full of nitrogen or oxygen, while the two other cylinders contain water. The water in the larger of these cylinders will displace nearly 700 c.cm. of gas, while that from the smaller cylinder will displace the remainder. The mercury manometer in Dr. Kornmann's apparatus has been done away with, as the water manometer shows the respiratory variations in pressure with much greater clearness.

An Antiseptic Instrument Case.

Dr. H. SIMMONS (Bournemouth) writes: The need of a sterile instrument for immediate use in ordinary home and visiting practice is often felt by practitioners. The Holborn Surgical Instrument Company has recently made for me a dressing-case in which the instruments are constantly immersed in an antiseptic solution, and can be washed or boiled after use and returned to the case and kept there ready for future need. The case, as made for me, contains fine knife for incision of abscesses, scalpel, dressing forceps, two pairs of artery forceps, scissors, probe, needles, and sutures; the top is held on firmly by thumb screws, and there is no fear of leakage in whatever position it is carried, and I find it very useful in my work.

[3] *La Sécrétion Pancréatique.* Par Emile F. Terroine. Paris: Hermann et Fils. 1913. (Roy. 8vo, pp. 133. Fr. 5.)

Nova et Vetera.

PROVERBIAL MEDICINE.

PROVERBS ON ARTICLES OF FOOD—BUTTER AND EGGS AND A POUND OF TEA.

BREAD and cheese are, as we have seen (see vol. i for 1913, pp. 1120–1122), the chief theme of many proverbs; the "staff of life" and the "peevish elf" enter into many sayings, and suggest not a few interesting speculations of a medical or semi-medical nature. Butter, too, has so intimate a relationship with bread that we expect to find it also figuring in proverbic lore; and we are not altogether disappointed, although the number of butter-adages is comparatively small, perhaps because the nutrimental qualities of this substance are unaccompanied by the elfish tendencies of cheese or the binding properties of bread. There may be another reason: the Greeks, it is said, were acquainted with butter, but never ate it; so perhaps the making of proverbs on it was checked at its very source (for Europe at least), and never got fairly started.

Literature, however, is not quite destitute of butter-proverbs of a somewhat medical kind. Indeed, butter has been used as a medicine itself. There is—or at least there was—an unguent called May butter, Butyrum Majale, formed by melting in the sun fresh butter which had been made up without any salt; John Quincy,[1] however, in his *Compleat English Dispensatory* (1718), has no high praise for its therapeutic powers. "This is a very trifling medicine," he says, "and of no use but as any simple Unguent, or plain Lard may be." Dr. Thomas Moffet,[2] to whom we had occasion to refer in the proverbiology of bread and cheese, gives a much higher place to butter than Quincy. He wrote:

"The *Dutchmen* have a By-verse among them to this Effect:

> Eat Butter first, and eat it last,
> And live till a hundred Years be past.

And *Paracelsus*, in his Book *de Tartaro*, thinketh the *Netherlanders* be more free of the Stone than other Nations, because their chiefest Food is Butter; wherein the silly Alchymist was not a little mistaken, for no People in the World are more subject to that Disease, as the Number and Excellency of Stone-cutters in that Country may plainly prove." Still, whilst Moffet will not admit the lithodialytic powers of butter, he says "it were tedious and impertinent to show how many and necessary Uses it hath in Surgery and Physic." He brings it into another proverb too—one which we have seen already, but with a different foodstuff as its burden—when he tells us that it is best at breakfast, tolerable in the beginning of dinner, but at supper no way good, according to the old adage, "Butter is Gold in the Morning, Silver at Noon, and Lead at Night." It is also best for children when they are growing, and for old men when they are declining, in their second childhood, as we may say; but it is very unwholesome between these ages, "because through the Heat of young Stomachs it is forthwith converted into Choler," a dangerous happening, it was thought, in Moffet's times. The old doctor has a little joke to crack, too, about butter and the Netherlanders, as he calls them: after reminding his readers how English people, when the bride comes from church, throw wheat upon her head, he informs them that the Dutch give brides and bridegrooms under like circumstances a pot of butter as presaging plenty and abundance; "which they esteem a Foundation, tho' a slippery Foundation, of their Lives." This little pleasantry we can well imagine Dr. Thomas setting down with some demureness of expression, looking, in fact, as if "butter wouldn't melt in his mouth."

Burton[3] has no high opinion of butter in melancholy. "Milk, and all that comes of milk, as butter, cheese, curds, etc., increase melancholy (whey only excepted, which is most wholesome): some except asses' milk." It is interesting to take note of the exception made in favour of whey, an exception which is quite in keeping with modern views on the value of that which Johnson defines, somewhat pompously, as "the thin or serous part of milk, from which the oleose or grumous part has been separated." Neither must we forget the wonderful life-lengthening properties which have of recent years been ascribed to buttermilk. On the other hand, Phillips, the poet, has a line or two which run thus: "He that quaffs Such wheyish liquors, oft with cholic pangs He'll roar." Ellis, too, in his *Modern Husbandman*,[4] has a mysterious verse about whey and buttermilk (the "soor doock" of Scotland), and their differentiating effects (so to say) upon hogs and dogs:

> Whey will fat a hog
> And starve a dog;
> Buttermilk will fat a dog,
> And starve a hog.

To return, however, to butter, which, as Howell's proverb has it, is "good for anything but to stop an oven or seal a letter," there are some sayings which verge upon medical matters. The allusion to the cow's annual reproductive necessities is put with exceptional delicacy in the proverb which says "butter is once a year in the cow's horn," meaning, of course, that before she calves she gives no milk. The startling announcement that "butter is mad twice a year" is very simply explained, for in summer heat it is too thin and fluid, and in winter time it is made too hard by the cold to be spread on bread. Falstaff[5] knew this well when he said, "I am as subject to heat as butter." It is mad, therefore, in the modified sense that it does not look like itself! It calls for no asylum treatment. Perhaps this also has something to do with the proverbial phrase, "as mad as May butter," although June or July, but for the lack of alliteration with mad, would be a more suitable month to name.

Butter in a dog's mouth is the theme of several proverbs. "You can't get butter out of a dog's mouth" is one of these; allied to this is "The dog has got the butter to keep"; another is "It is as easy to get butter out of a dog's mouth as money out of a lawyer"; and when a thing is past all recovery we say, "It is like butter in the black dog's hause" (that is, throat). A very simple explanation suggests itself, the fact, not to be denied, that butter melts easily and proceeds with rapidity down the oesophagus of the "dear, dumb soul that thrills at man's caress"; but there is a more subtle meaning perhaps underlying this piece of proverbial philosophy. Animals are either poltophagous or psomophagous; the former chew their food for a long time before swallowing it, and the horse is a good instance of poltophagy; the latter bolt it without mastication, and to this group belongs the dog. So, both on account of its liquescent character when placed in contact with a mucous membrane, and also by reason of the psomophagous nature of the dog, butter put in the canine buccal cavity is beyond recovery. What, then, asks another proverb, "is a pound of butter among a kennel of hounds"? meaning that, as a supply, it will not last long. Perhaps, however, these are too intricate explanations; possibly "you can't get butter out of a dog's mouth" is simply to say because it is not there, as "the breeks are not to be got from a Highlandman."

"Hunger is a good sauce" is a well known saying, and akin to it is "They that have no other meat, bread-and-butter are glad to eat"; and resistance to the inevitable in life often gives illustration to the adage, "That which will not be butter must be made into cheese."[6]

Yet another truth is contained in the proverb that words (even soft or fair words) will butter no parsnips, and so, too, hard words break no bones; but it is a modified truth, for, after all, the wheels of life do move more smoothly when oiled, even the most unapproachable of us being mollified by a little "butter" not too thickly applied, and "Give a dog a bad name and hang him" shows that words have an effect. By the way, the buttered parsnips proverb has its Latin equivalent in "Verba non alunt familiam" (Words won't support a family).

Now let us pass from butter to eggs; they may be in the same basket. There are two medical aspects in which the egg proverbs may be looked at; there are some of the sayings in which the nutritional view-point is emphasized, and there are others in which heredity comes prominently into sight; for it must not be forgotten that whilst eggs are important foodstuffs, an egg is also the symbol of the contact which exists between one generation and

[1] Quincy, J., *Compleat English Dispensatory*, III, xi, 476, 1718.
[2] Moffet, T., *Health's Improvement*, p. 218, 1746.
[3] Burton, R., *Anatomy of Melancholy*, Pt. I, Sect. ii, Mem. 1, subsect. 4.
[4] Ellis, quoted by Lean, in his *Collectanea*, i, p. 437.
[5] Shakespeare, *Merry Wives of Windsor*, Act iii, sc. 5, line 117.
[6] Ray, J., *Complete Collection of English Proverbs*, p. 58, 1818.

another, embryological adages being usually expressed in terms of ova or eggs. Arbuthnot, in his *Essay concerning the Nature of Aliments*, described eggs as "perhaps the highest, most nourishing, and exalted of animal food, and most indigestible," and modern opinion[7] places an egg "next to milk as one of the most valuable articles of an invalid's diet." Proverbs had recognized that much nourishment was stored up in very small space in eggs before the days of chemical analysis and the knowledge of proteins. Thus, when it is desired to say that a man (or it may be a woman) has a very high opinion of himself we announce that he is as "full of conceit as an egg's full of meat"; another proverb[8] is to the effect that "an egg is a mouthful of meat and a townful of shame," to which Lean adds the explanatory clause, "if it be stolen." The high nutritious qualities of the egg are doubtless hinted at, too, in the adage, "an egg and to bed," which reminds us of the cheese saying, "after cheese comes nothing." It is idle to speculate about the origin or even the meaning of customs, but possibly the good luck which is supposed to attach itself to the giving of an egg to a baby on its first visit to any one's house[9] may have to do with the value of the offering from the food point of view; on the other hand, it may have an embryological significance, what has come from the egg being presented with an egg. It ought to be added that the good luck goes if the egg is not a new-laid one. Mungo Park[10] tells of a curious restriction as to the eating of eggs in the interior of Africa. The medical explorer found that in Teesee "no woman is allowed to eat an egg; this prohibition, whether arising from ancient superstition, or from the craftiness of some old Bushreen (Mussalman priest) who loved eggs himself, is rigidly adhered to, and nothing will more affront a woman of Teesee than to offer her an egg; the custom is the more singular, as the men eat eggs without scruple in the presence of their wives." Such is the despotism of custom. With other customs, or superstitions rather, such as the setting of eggs, the marking of them with a +, and the prohibition against letting them go out of a house or come into it after sunset, we have nothing to do here; neither is it any interest to us to know how maidens may get a sight of their future husbands by egg-divination; but it is a matter of some medical concern that there is a belief that eating eggs makes the face freckled. Lean[11] quotes this notion from Buttes's *Dyet's Dry Dinner* (a curious work published in London in 1599), and one thinks in this relation not so much of the hen's egg as of the speckled one of some other bird; possibly all that is meant is that if one eats many speckled eggs one's face will get freckled too. But there is another possible explanation. Lean,[11] quoting from Hardwicke's *Science Gossip*, says that these freckles on the skin are called "fawn freckles," and come at the same time as the building of birds' nests. Now it is interesting to know that *fawn* sometimes means to bring forth young and that *in fawn* is pregnant; one of the best known of the older signs of pregnancy in woman is that she has freckles on her face, and so it is just possible that fawn freckles may have some connexion with the facial marks in pregnancy, and that although not due to eating eggs they are very really due to the development which is going on from an egg.

Two other dietetic references to eggs may be touched upon. One of them is, "You must drink as much after an egg as after an ox," and this moves Ray,[12] who quotes it, to righteous anger: "This is a fond and ungrounded old saying." Of course, Ray is exciting himself quite unnecessarily, for, as no one is likely to perform the feat of "eating an ox," the comparison breaks down; the saying is like that other which declares that "he that will steal an egg will steal an ox," meaning, to use another proverb, that "he that will steal a pin will steal a better thing." All that is signified is that the fluid part of a meal is necessary. The other reference is contained in the familiar allusion to the insipidity of the white of the egg found in the Bible (Job vi, 6): "Is there any taste in the white of an egg?" This, by the way, is not the reading in the Vulgate version, or in the Douay, which comes from it; and in the Revised Version there is the marginal alternative, "The juice of purslain," purslain, or purslane, being a somewhat tasteless succulent herb. It will, however, be a pity if we have to bid farewell to so well-known a Bible proverb.

Notwithstanding its high food value, an egg is only an egg after all, and a Scots proverb[13] puts this thought into words, saying, "They hae need o' a canny cook that hae but ae egg to their dinner"; still, "better have a new-laid egg at Christmas than a calf at Easter," an adage which reminds us of the well-known "bird in the hand," and of that other, "Count not your chickens before they are hatched."

Speaking of hatching brings us to the egg as the emblem of heredity. A little-known proverb bridges over the gulf between the egg in embryology and the egg in diet: "An egg will be in three bellies in twenty-four hours." The hen's is one and the eater's is another, but who will guess the third? There is a Greek proverb, *κακοῦ κόρακος κακὸν ὠόν*, which may be rendered, "A bad crow lays a bad egg"; it represents the popular idea of morbid heredity, but neither eugenics nor Mendelism bears it out altogether, for an apparently good crow sometimes lays a bad egg, and an undoubtedly bad crow occasionally lays a good one. Heredity is not so simple a business as the crow proverb seems to suggest, but Mendel has done much to elucidate its complexity by showing the existence of the law of percentages among the dominant and recessive characters of plants and animals. The saying that "a black hen lays a white egg" may seem at first sight to be a mere statement of fact and not a proverb at all; but Ray[14] sees much more in it. He says: "This is a French proverb, *noire geline pond blanc oeuf;* I conceive the meaning of it is that a black woman may bear a fair child." Ray may, of course, be right, but to most minds the introduction of the mysteries of superfecundation and superfetation into the interpretation of this piece of homely wisdom will seem to savour of subtlety.

There is, however, here as in so many other cases, a proverb which seems to offer only a qualified approval of the statement that a bad crow lays a bad egg. It is this: "Many a good cow hath but a bad calf." So it often is with proverbs, and the reason is not far to seek, the proverb-maker wishing to give the proverb-user something to suit all contingencies. The Latin equivalent is *heroum filii noxae*, and the Greek, *Ἀνδρῶν ἡρώων τέκνα πήματα*; and Ray has so interesting a reflection on this matter[15] that I copy it here: "Aelius Sparitanus," he says, "in the life of *Severus* shows, by many examples, that men famous for learning, virtue, valour, or success, have, for the most part, either left behind them no children, or such as that it had been more for their honour and the interest of human affairs that they had died childless. We might add unto those which he produceth, many more out of our own history. So *Edward* the first, a wise and valiant prince, left us *Edward* the second; *Edward* the black prince, *Richard* the second; *Henry* the fifth, a valiant and successful king, *Henry* the sixth, a very unfortunate prince, though otherwise a good man. And yet there want not in history instances to the contrary, as, among the *French*, *Charles Martel*, *Pipin*, and *Charlemain* in continual succession, so *Joseph Scaliger* the son was, in point of scholarship, no whit inferior to *Julius* the father. Fortes creantur fortibus et bonis, etc."

Yes, indeed, there are many contradictions in the matter of heredity, and some of the greatest men would never have been in the world at all if their parents had been successfully segregated or skilfully asexualized on modern principles. It is a tangle of tangles, and one is tempted to put Mendelian results into a new and up-to-date proverb to the effect that "it is hard to tell who a man's father was till you see what his son is going to be," or, perhaps, "you know not the hen till you have the chick's egg." Yet there is a long-lasting truth, and it is well that it be so, in the saying that "the crow thinks her own bird fairest"; there is sober fact, too, in the proverb that "that which comes of a cat will catch mice," and in that other (an Italian one) that "that which is bred of a hen will scrape." Also, "Every bird must hatch her own egg" is a great rule, which the hedge sparrow breaks, in the case of the intrusive cuckoo, to the sad loss of her own

[7] *Green's Encyclopedia and Dictionary of Medicine*, v, p. 8, 1912.
[8] Lean's *Collectanea*, iii, p. 417, 1903.
[9] Lean's *Collectanea*, ii, p. 101, 1903.
[10] *Mungo Park's Travels*, c. vi, 1816.
[11] Lean's *Collectanea*, ii, p. 214; iii, p. 109, 1903.
[12] *Ray's Proverbs*, p. 22, 1813.
[13] Cheviot, A., *Proverbs of Scotland*, p. 362, 1896.
[14] *Ray's Proverbs*, p. 56, 1813.
[15] Ray, J., *Proverbs*, p. 64, 1813.

young ones, pitched forth so ignominiously from the maternal nest, as "sure as eggs is eggs."

Sir James M. Barrie's *Sentimental Tommy*, when masquerading as the Young Pretender, was greeted by Corp of that Ilk with "Welcome, my prince, once more to bonny Scotland," and received from the same faithful adherent the even more gratifying tidings, "there's an egg to your tea." Let us reverse the order, and have some tea to our eggs. There are not many tea proverbs, unless, indeed, the libraries of the Chinese Republic contain treasures little known to the Western world; and those that we have are very slightly medical. But before we begin our repast, at the risk of "coming in with five eggs," as the saying is, I should remind my readers that as "there are twenty vulgarities a man may commit in the eating of an egg," so we must take care how we sip our tea. A proverb instructs us that "good tea cannot be too hot, nor good beer too cold," and another says, "unless the kettle boiling be, filling the teapot spoils the tea"; and these are warnings which the pharmacological pharmacist, knowing the difference between an infusion and a decoction, and having a profound acquaintance with theine and tannin, will doubtless subscribe to. "Old coffees, young teas," is a planter's maxim which Lean discovered in the *St. James's Gazette* for June 30th, 1884 [16]; the reason, of course, is that the coffee may be kept (before roasting) to mature, whilst the tea should not be so kept. There is truth in the adage that "so long as there's water there's tea." But there is refreshment as well when the hostess tells the late comer that she is sending for a newly infused supply. The "cup which cheers" does so the more potently when it is freshly made, volatile oil or some other mysterious component part being then perhaps in a nascent state, so to speak. "Tea, thou soft, thou sober, sage and venerable liquid," said Colley Cibber in the *Lady's Last Stake*, and Henry Fielding thought "love and scandal were the best sweeteners of it" (*Love in Several Masques*). Many things have been "given away with a pound of tea," but the true tea devotee would give away much to retain the pound of tea. The medical profession still remembers with gratitude Anthony Trollope's kindly picture of Dr. Thorne, self-sacrificing almost to quixotism but with a touch of the human weakness coming in upon him in his overmastering love for tea, and tea in quantity too. Samuel Johnson [17] likewise described himself as "a hardened and shameless tea drinker"; and in his *Dictionary* he quotes, evidently with appreciation, Waller's lines, "The muses' friend, tea, does our fancy aid, Repress those vapours which the head invade." With this semi-medical and poetical permission to drink tea the present ramble among the flowers of proverbial philosophy must find an end. But the writer has a word of warning first: Tea is not for infants!

He will further illustrate his warning by an example. Once when working in that tea-drinking neighbourhood, the Cowgate of Edinburgh—would that it were only tea that was drunk there!—he was engaged in prescribing for a miserable atrophic infant of some two months or thereby. Wishing to bring some feeling of shame into the bosom of the mother whose the child was, and shrewdly suspecting that she was comforting herself with the reflection (a favourite one in the Cowgate) that the infant was "getting what they took themselves," he remarked, with fine irony, that he presumed the baby was being fed upon tea. With neither a smile of satisfaction nor with any look of abasement, but in the clear, calm tones of slight regret, the mother replied that "he" (the tender child of 2 months) "was not a great tea-drinker"!

INTERNATIONAL CONGRESS OF NEUROLOGY AND PSYCHIATRY.

THE third International Congress of Neurology and Psychiatry was held in the Congress Hall of the exhibition at Ghent from August 20th to 26th, under the presidency of Dr. CROCQ, Professor at the University of Brussels, and of Dr. GLORIEUX, Inspector-General of Belgian Asylums and Colonies for the Insane. About 150 members, representing various nationalities, attended, but the British contingent was small, owing probably to the recent occurrence in London of the great International Congress of Medicine. Among those who attended were Dr. Aldren Turner, representing the Royal College of Physicians and the Government; Dr. Hubert Bond, one of the Commissioners in Lunacy; Dr. L. R. Oswald, Physician-Superintendent of the Glasgow Royal Asylum, representing the University of Glasgow; Dr. Mary Booth, of Sydney, Australia, and Dr. G. E. Shuttleworth, delegated by the Medico-Psychological Association of Great Britain and Ireland.

The Congress was officially opened on behalf of the Belgian Government by the Minister of Justice, M. HENRY CARTON DE WIART, and an interesting inaugural address was delivered by Dr. CROCQ on muscular tonus, reflexes, and contracture. Papers followed, on successive days, on the colloidal structure of the nerve cells and their variations in normal and pathological conditions, by Professor MARINESCO of Bucharest; on syphilitic spondylitis and allied conditions, by Professor SACHS of New York; and on the mechanism of regeneration in the nervous system, by Professor DUSTIN of Brussels. Other neurological papers of interest were contributed by Professor MENDELSSOHN of Paris, Professor MORSELLI of Genoa, and Professor DONAGGIO of Modena.

There were several interesting discussions, including those on the treatment of progressive paralysis, introduced by Dr. PILCZ of Vienna; on the influence of internal secretory glands in relation to psychology and mental pathology, by Professor PARHON of Bucharest; on the electric treatment of exophthalmic goitre, by Dr. PFEIFFER of Levernois; on the treatment of nervous hyperexcitability by organic bromides, by Dr. BERRY of Paris; and on hypnotism and suggestion in mental disorders, by Dr. VAN DE LANOITTE of Verviers.

Of more purely psychiatric interest were papers by Professor MOREIRA of Rio de Janeiro on the mental and nervous maladies of Brazil; by Dr. BÉRILLON of Paris on the syphilitic neurasthenias; and on states of regression of the personality, by Dr. SOLLIER of Paris. A study of madness in the Old Testament was contributed by Dr. ROUBY of Algiers.

The treatment of abnormal children, and of adult defectives in colonies, has attracted much attention in Belgium, and papers relating thereto were contributed by Professor FERRARI of Bologna, by Dr. DECROLY of Brussels, and Professor WEYGANDT of Hamburg. An interesting morning was spent by the Congress in a visit to the St. Joseph Institution for Abnormal Boys at Ghent, where ingenious methods of education and training were demonstrated. The communal lunatic asylum, Le Strop, was also inspected; and as interludes to the more serious work of the Congress visits and excursions were organized to see the picturesque edifices and other objects of interest in the old-world cities of Ghent and Bruges.

The Honorary Secretaries, Dr. D'Hollander of Mons, and Dr. Boulenger of Brussels, deserve much credit for their satisfactory arrangements.

[16] Lean's *Collectanea* i, p. 495, 1902.
[17] Johnson's *Works*, vi, p. 21.

A GAS CONGRESS AND EXHIBITION.

IT is rather more than a hundred years since Byron classed together "Cow-pox and tractors, galvanism and gas." Tractors have gone the way of other quackeries, but cow-pox as a preventive of small-pox is appreciated, at any rate in Australia, and what the poet would have included under the head of "galvanism" is competing with gas for the privilege of lighting and warming the homes of all sorts and conditions of men and providing power to the manufacturer. The leaders of the gas industry, holding that it entered on its second century last year, have combined with the Institution of Gas Engineers, which celebrated its jubilee this year, to organize a national gas congress and exhibition in the International Exhibition Halls, Shepherd's Bush, London, during next month.

The purpose is to demonstrate the numerous ways in which the combined efforts of the gas industry can aid in solving efficiently and economically many urgent problems relating to national health and physique, personal hygiene, the housing and better feeding of the working classes, the purification of the air of cities by the abatement of the smoke nuisance, the hygienic and economic aspects of good and bad illumination, the ventilation of buildings,

the conservation of the national coal supply, domestic service questions, and other aspects of household and industrial science, art, and finance.

The scheme of the exhibition will, in addition to general exhibits relating to the manufacture, testing, and distribution of gas, comprise suites of model furnished rooms—living rooms, halls, bedrooms, nurseries, bathrooms, kitchens, pantries, and so on, to suit a variety of purses and tastes—schoolrooms, hospital wards, hotel and institution kitchens, laboratories, and other rooms for special purposes, fitted up with the efficient and economical gas appliances for lighting, heating, cooking, hot-water supply and power purposes; there will also be model workshops, which will afford opportunities for showing the many applications of gas to industrial purposes. There will be a cookery demonstration room, in which experts will give lectures and demonstrations, and space will be devoted to special exhibits related to hygienic and scientific lighting, cooking, hot-water supply, heating of premises, industrial heating, and motive power; to the raw materials used in gas manufacture, to the preparation and uses of residual products, to the application of scientific apparatus, and to engineering in relation to gas manufacture, gas distribution, and gas measurement.

It has been arranged to hold conferences during the Congress month from October 1st to November 1st between the administrators of gas undertakings and educational, medical, and sanitary authorities, employers of labour, and social economists. The conferences include one on smoke abatement, to discuss the use of gas for fuel; one on food and cookery, to consider means for increasing knowledge of economical and correct methods of preparing and cooking food, especially in relation to cooking in the working man's home; a conference of persons interested in social and economic questions on the economics of the home, to discuss the use of gas in relation to (*a*) the artisan's weekly budget; (*b*) the economics of housekeeping for the middle classes; (*c*) the dearth of domestic servants; (*d*) the furnishing and equipment of the home. There will also be a conference to discuss the hygienic aspect of gas for lighting, heating, cooking, and ventilation; a conference of educational authorities, to discuss the lighting, heating, and ventilation of schools, the teaching of cooking in schools, and the arrangement and equipment of cookery and housewifery centres. A conference of manufacturers will discuss the lighting, heating, and ventilation of factories and workshops, offices, and other places of business, the economic value of adequate illumination, the use of gas as a fuel for industrial purposes, the use of gas for power and cooking for employees. At a conference on the science of illumination, the principles of scientific illumination in their relation to the use of gas for lighting will be discussed. Amongst the speakers who have promised to read papers or to open discussions are Sir William Bennett, Sir Alfred Keogh, Dr. Leonard Hill, and Sir William Richmond.

MOTOR CARS FOR MEDICAL MEN.

THE AUTOMOBILE ASSOCIATION AND MOTOR UNION.

DR. A. ADAMS (Liverpool Sanatorium, Kingswood, Frodsham) writes, with reference to the paragraph under this heading published last week, to say that on a recent occasion when he sought legal advice from the Automobile Association with respect to the putting of cars in a public garage he was informed that the advice given free only referred to the Motor Cars Act.

SMALL CARS.

THE following replies have been received to the question from "Cornubiensis" published in the JOURNAL of September 20th:

B. writes: Having recently driven a 7-h.p. Austin 6,000 miles, with practically no trouble due to the car, I can recommend it to him. Apparently the De Dion and Rover sixes and eights are also as good as can be. All these makes of small cars have to be obtained second-hand. Amongst new cars it seems as if the G. W. K. would suit him; but it has two cylinders, and he has been warned against them. The others have only one. I have no interest in any motor firm.

RUSTYCUSS writes: I have had a "Cyclecar" for six months, and have used it constantly, and found it in every way very satisfactory. This is open country, with poor to moderate roads and some stiff hills. I get anything, according to roads and load, from forty to fifty miles a gallon of benzol, which I use. I average twenty miles an hour, and could, if I wished, do more. Any mechanical trouble—and it has been very little—has been due to my own ignorance of motors. I have never been stopped once, except to change wheels for a puncture. I cannot advise any one who wants a small economical single or two-seater to do better than get the paper *The Cyclecar* and study it, back numbers too, and then see the various cyclecars and try them at the show. There are quite a dozen reliable and well-tried makers to choose from, and though mine is a four-cylinder 10-h.p. model, following car-practice in every detail, still I do not feel at all sure that some of the lighter models, with air-cooling and double-belt drive, are not just as sound an investment. I shall be happy to write to "Cornubiensis" in detail of my experiences if he cares to know them.

DR. GEO. WILLETT (Keynsham, Bristol) advises the 10-h.p. Singer Light Car. I have, he continues, done my country practice with one for the last three months in a hilly district, and with some very rough and bumpy roads, with the greatest satisfaction. It has a four-cylinder water-coated engine, the induction pipe being warmed, and thus giving an easy start-up in the morning. I use Shell No. 2 spirit, and on ordinary roads can do 44½ miles to the gallon. No hill is too steep for me, and one quart of lubricating oil a week is ample. One pint of distilled water a week suffices for the radiator. It is quite an exception to meet a hill one cannot get up on top gear. I reckon that 1d. a mile run covers all costs, including tyres and depreciation. The front tyres should be kept pumped to 60 lb., and back tyres to 65 lb. These figures may seem somewhat startling for a novice, as I am, but a Stewart distance meter will prove their accuracy. With much hill climbing or driving in traffic my mileage comes down to forty miles a gallon.

STEAM CARS.

WE have received a reply from a medical correspondent stating that while he found a steam car excellent for pace and smooth running when once working, his experience was that breakdowns were frequent, the expense of repairs considerable, and the running expenses high.

COUPÉ CARS.

OWNER DRIVER writes to recommend to "Verdant Green" a Hurtu car, particulars of which can be obtained from the Ariel Repairing Company, Camberwell Road, London, S.E. Our correspondent states that he has run a 10-h.p. car of this make successfully and economically. He drives himself, and the probable cost of upkeep is about £30 a year.

LITERARY NOTES.

A FIFTH edition of Dr. Burney Yeo's *Manual of Medical Treatment* is announced by Messrs. Cassell and Co. The revision has been carried out by Dr. Raymond Crawfurd and Dr. E. Farquhar Buzzard, who collaborated with the author in the fourth edition.

Admiral Penrose Fitzgerald in his *Memories of the Sea* (London, Edward Arnold, 1913) gives a remarkable picture of the provision for the needs of sick or wounded sailors sixty years ago. Describing a convoy starting for service in the China waters (*circa* 1856), he says:

Their radius of action under steam was very small, so that the voyage was made almost entirely under sail. They did not carry a doctor, but the lieutenant in command was supplied with a medicine chest and a small book of medical and simple surgical instructions, telling him how to act in case any of his men were taken ill or met with an accident. The story was told afterwards that one of these young officers, after reading his book of instructions from cover to cover, got so puzzled with the contents that he gave it up as a bad job; so he called all hands aft on the quarter-deck, and having ordered the medical chest to be brought up from below, he thus addressed his crew: "Here are your medical stores for the voyage. I cannot make head or tail of the instructions for their use, so I am going to serve them all out to the messes in equal parts, to do what you like with them; and don't use them all at once, as they have got to last you until the ship arrives at Hongkong."

"The ship," adds the admiral dryly, "did arrive at Hong Kong, with all hands in the best of health, but it is not stated what became of the medical stores." As, in his own words, one chestnut suggests another, he goes on to tell the following story:

When the great fleet sailed for the Baltic in 1854, to fight the Russians, it was naturally expected that there would be some wounded men; so it was decided to give the officers brief medical instruction in rendering first aid until one of the doctors could attend to the case. Among these instructions was the use of the tourniquet, to arrest haemorrhage. So one fine night, in the middle watch, the sentry at the admiral's cabin door on board the *Neptune* cut his own throat, which gave the officer of the watch (Lieutenant ——) an opportunity of putting in practice the first-aid instructions he had so lately received. He therefore whipped out his pocket-handkerchief, knotted it round the sentry's throat below the wound, and hove it up taut, with a bayonet scabbard for a lever. He then sent for the doctor, but before that officer arrived the gallant marine had breathed his last. In fact, he had not breathed at all since the tourniquet was applied.

A story of misdirected zeal not, perhaps, without a moral even at the present day.

We have received the first number of the *American Journal of Tropical Diseases and Preventive Medicine*, the official organ of the American Society of Tropical Medicine. The editor is Dr. Creighton Wellman. The new journal, which is intended to be a medium through which American workers may express themselves, is published at New Orleans. It contains a large amount of valuable matter. Among other papers are: The acclimatization of the white race in Cuba, by Dr. Juan Guiteras of Havana; the etiology of ulcerating granuloma, by Dr. Richard P. Strong of Boston; and one on vaccines and serums in the treatment of Malta fever, by Dr. A. Parker Hitchens. The editor and Dr. C. C. Bass of New Orleans give an account of recent researches on the etiology of beri-beri; Dr. W. P. Chamberlain of Plattsburg, Pennsylvania, writes on the character of the rice which prevents beri-beri; and Dr. Victor G. Heisner describes further experiences with beri-beri in the Philippine Islands. Dr. K. H. Beall contributes some etiological data relative to pellagra. The new periodical is well printed, and in an editorial sense well "groomed." The second number fully maintains the high standard of the first.

Dr. Arthur M. Corwin, of Chicago, has sent us a poem contributed by him to the *Illinois Medical Journal* for August, in celebration of the opening of the new West Side Hospital. It is too long to quote in full. The following description of a sick man will give an idea of its purport:

> To sick men here we rear a monument—
> No shaft of granite, gray, or slab of white
> To mark the doleful spot where love's lament
> Is sung in requiem to gath'ring night.
> Memorial is this of nobler brand
> Than tombs, within which lifeless dust endures;
> For to the living here its walls shall stand
> A monumental hall of famous cures.
> The sick man! Who more worthy of our song?
> In robust health, disdaining sympathy;
> When ill, with vital functions acting wrong,
> No infant more dependent then than he.
> Squandered his revenue of mental power,
> Bankrupt in energy of body worse,
> His neurons weak, his disposition sour,
> His days a bore, his nights a living curse;
> What wonder that the victim of disease
> Should need some balm more practical than prayers
> From racking pain to give him lasting ease;
> More potent, too, than patent drugs and wares
> Of advertising quacks, and passes made
> By smooth magnetic fakes who fortunes tell
> From skiagraphs of pocket-books, X-rayed,
> And guarantees to make their patients well?

Dr. Corwin's muse, though excellent in intention, is pedestrian in style. One would like to know more of the "balm" which works such wonders.

Dr. William L. Storey (Belfast) writes: To express "the faculty of making happy and unexpected discoveries by accident" the word "Serendipity" (from Serendip, an old name for Ceylon) was coined by Horace Walpole, and it has now been introduced with that sense into the *New English Dictionary*. This I found out casually the other day when consulting *Notes and Queries* on some particular subject, so my discovery is itself—to use the words of Horace Walpole *infra*—"of the kind which I call Serendipity." *Notes and Queries* gives some interesting information as to the coinage of this term. Its appearance on a shop in Westbourne Grove was the subject of a query addressed to that paper some ten years ago, and elicited an instructive reply from a correspondent as follows: "Writing about the discovery he had made in connexion with his picture of Bianca Capello he [Walpole] says:

> "This discovery I made by a talisman which Mr. Chute calls the *Sortes Walpolianae*, by which I find everything I want *à point nommé* wherever I dip for it. This discovery, indeed, is almost of the kind which I call *Serendipity*, a very expressive word, which, as I have nothing better to tell you, I shall endeavour to explain to you; you will understand it better by the derivation than by the definition. I once read a silly fairy tale called *The Three Princes of Serendip*; as their Highnesses travelled they were always making discoveries, by accidents and sagacity, of things which they were not in quest of; for instance, one of them discovered that a mule blind of the right eye had travelled the same road lately, because the grass was eaten only on the left side, where it was worse than on the right—now do you understand Serendipity? One of the most remarkable instances of this *accidental sagacity* (for you must observe that *no* discovery of the thing you are looking for comes under this description) was of my Lord Shaftesbury who happening to dine at Lord Chancellor Clarendon's found out the marriage of the Duke of York and Mrs. Hyde by the respect with which her mother treated her at table."

For illustrations of serendipity mention might be made *inter alia* of an address entitled "After the Method of Zadig" in Huxley's *Science and Culture*, General Baden-Powell's admirable little treatise on scouting, and, of course, the Sherlock Holmes adventures. Of the many discoveries by accidents and sagacity made by medical men "the time would fail me to tell," but perhaps space will be found for one made by Dr. Byrom Bramwell (see his clinical lecture on "The Treatment of Pernicious Anaemia" in the JOURNAL of May 24th):

> In the first case of myxoedema which I treated by thyroid I gave too large doses, and produced acute thyroidism; it was attended with profuse desquamation of the skin. I argued that if thyroid tissue . . . could produce this extraordinary desquamation in myxoedema, it would probably be of use in psoriasis and other skin diseases. In the first three cases of psoriasis in which I tried it the result was remarkable. The extraordinary success in these first cases led me to think that I had made a remarkable discovery. There is no doubt that it was a discovery and advance, for many cases of psoriasis and certain other skin diseases are very greatly benefited by thyroid treatment, but the remedy is an uncertain one.

But even though the remedy be uncertain the happy and unexpected discovery was made by accident and sagacity, and can therefore be given as an illustration "of the kind which I call Serendipity."

In France, as elsewhere, formerly barbers and surgeons were for centuries joined together. In the *Progrès Médical* of June 14th a writer who signs himself M. G. gives an account of the community of surgeons of Rouen based on a history by Dr. François Hue recently published. Little is known about the early period of this community, but their first statutes were inserted in the *Livre des Médecins* of Etienne Boileau, Provost of Paris in 1260. The administration of the community was then in the hands of a committee of six sworn members. Their function was to examine persons who practised surgery, and on their report the provost authorized or forbade the practice of those persons. In these statutes there is nothing to show that surgeons practised barbery, nor in the statutes of the barbers of 1371 is there any allusion to surgery. In 1500 the surgeons and barbers of Paris were reunited into one community by the efforts of the Faculty of Medicine, which wished to bring the surgeons under its authority. After innumerable lawsuits Charles the Ninth in 1567 decided that no barber should be admitted master in his craft unless he had passed an examination in surgery. The union lasted till the foundation of the College of Surgery in 1763. In 1648 a branch of the community was detached under the name of barbers, wig dressers, and bath men, which for a long time was under the dominion of the barber-surgeons, and was erected into a community only in 1673. This was, speaking broadly, the history of the community of surgeons of Rouen. In the sixteenth and seventeenth centuries it was composed of a lieutenant, of the first surgeon of the king, of three sworn wardens, of sworn masters, *aspirants*, and apprentices. The lieutenant paid a tax to the first barber of the king. The masters had the right to keep open shop and to hang out boxes and basins. Their number was from 30 to 35. They were recruited by the procedure of the "great masterpiece," a long and minute examination consisting of fourteen different parts and extending over several months. A man could become an *aspirant* only after an apprenticeship of three years under a master. Gradually he came to be able to take the master's place, and then either remained all his life assistant to a surgeon or looked after the business of a surgeon's widow, or passed the great examination if he could pay the fees, which were high. Sons of masters had certain privileges. They paid only half fees and could remain with their fathers. Barber-surgeons practising in Rouen, in the suburbs, or within certain areas had an easier examination, which lasted only three days. Once admitted they were assigned a definite post with limited rights, somewhat similar to those of the later *officier de santé*. The community also admitted midwives and examined dentists and cutters for rupture. It managed its own affairs under the supervision of the Bailli and the *parlement*, which was the chief local authority of the province. All questions affecting the community were dealt with in meetings, which were held at least once a week. For a long time the surgeons remained united to the barbers. Then there came a period of drifting apart, till the severance was completed by the promulgation of the decree of Versailles in 1756.

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SURGERY OF THE BLOOD VESSELS.

ONLY a few years ago the surgery of the blood vessels consisted of ligation of arteries and veins, of some more or less experimental methods of dealing with aneurysms and of little else. Now, though the experimental stage is by no means over, we must regard operations on arteries and veins as quite within the practical sphere. Great interest in this branch of surgery was shown in the discussion on the Surgery of the Arterial System, in the Surgical Section of the International Medical Congress. And British surgeons greatly admired, and perhaps envied a little, the work recorded by Matas of New Orleans, Jeger of Berlin, Soresi of New York, and others who took part in the debate. We have been prompted by the keenness exhibited in that discussion, and through the perusal of two recent volumes on blood-vessel surgery, to present briefly the present state of our knowledge of the subject.

The first permanent union of two blood vessels was accomplished experimentally in a dog in 1879 by Eck, a Russian surgeon, who made a lateral anastomosis between the vena cava and the portal vein, and established what is now called Eck's fistula. Progress was hindered by the fear of thrombosis, if the intima were involved in the suture, but in 1899 Dörfler showed in twelve successful experiments out of sixteen that all the coats of arteries should be included in the suture, if fine enough needles and silk were employed. Many workers tried many plans to simplify and perfect technique. Mechanical appliances of great interest were invented; perhaps the most notable of these were the absorbable magnesium ring employed by Payr as a supporting scaffold over which one cut end of the vessel was folded and invaginated into the other before suturing, and Murphy's clamps, removed after suturing was completed, in his invagination method.

In 1905 Carrel, to whose ingenuity and patient resourcefulness we owe great advances in blood-vessel surgery, introduced a quite simple but perfectly efficient technique which has not been departed from since. Briefly, Carrel's method for, let us say, end-to-end arterial anastomosis (the usual strict asepsis of all surgery being presumed) consists in provisional haemostasis with suitable clamps or tapes held by forceps, thorough cleansing away of blood and blood clot, the introduction of three tension sutures of the finest silk, impregnated with vaseline or soaked in oil, equidistant in the circumference of the vessel, and passing through the whole thickness of the vessel walls. Then, as these sutures are made taut, the ends of the vessel are approximated and a continuous suture of the same material on a very fine needle is run round the vessel. The edges meet accurately, they are not everted—the interrupted mattress suture advocated by Dorrance and the continuous mattress suture of Briau and Jaboulay evert the edges, but that manœuvre is not necessary. It appears that the simple expedient of lubricating the thread makes all the difference between success and failure. Suture material of fine enough quality is only obtained by teasing out the finest silk thread and using one strand. Guthrie,[1] whose admirable volume on blood-vessel surgery should be known to all surgeons, finds that human hair makes admirable suture material: it is always at hand, and is stronger than the fine silk strand. Manipulations with such exquisite materials are not so difficult as may be supposed; when sterilized in oil these tiny threads are fairly easy to handle, and ordinary dexterity finds little trouble, we are assured, even in a first attempt. The temporary clamps are removed, and the blood stream continues its course uninterruptedly. Practically no bleeding occurs at the sutured edges; any weak spot may be strengthened with a single stitch. Conditions favourable to coagulation within the sutured vessel are now present—roughened endothelium, minute needle punctures, small portions of silk thread—but only very limited thrombosis does take place. When the sutured vessel is removed, at intervals of days or weeks after the operation, it is found that fibrinous deposits are laid down on the raw surfaces and on the threads, but these deposits are slight, and they very soon undergo absorptive changes and become protected with a covering of cells like those of the intima (Guthrie and Carrel). There is apparently no fear of the formation of an occluding thrombus or of a thrombus big enough to limit the circulation.

This technique may be applied in all sorts of ways: end-to-end anastomosis of artery and vein, as in the introduction of a segment of internal saphena vein to take the place of popliteal aneurysm excised with a portion of artery; lateral anastomosis, as in the formation of Eck's fistula between vena cava and portal vein; end-to-side anastomosis, and "patching" of large torn vessels. The histological changes in the vessel wall in the simplest of these procedures—reunion of divided arteries or veins—appear to be of no moment except for the traumatic effects in the suture line. But notable changes are found in a segment of vein introduced into the course of an artery and in veins in which the circulation is reversed by joining vein to artery, and vice versa. Guthrie finds thickening of the vessel wall and narrowing of the lumen, diminution of muscular tissue, and increase in fibrous. Similarly in hetero-transplantation—for example, in the interposition of a segment of vena cava of a dog (preserved in formalin for sixty days) between the ends of a divided common carotid artery of another, or in transplanting hetero-grafts (segments of dogs' vessels) into cats—the walls of the segment become thickened, muscular tissue disappears, the intima remains practically normal, and there is great increase in fibrous tissue in the outer coat. Physiologically these changes are explained more or less completely by consideration of the suggestions made by Mott that the vasa vasorum supplying "nutritional blood" are obliterated or obstructed, but the intima and adventitia are still nourished by "functional blood" circulating in the vessel and in the surrounding tissues. Guthrie believes that the changes observed are of passive rather than active origin, and there is no evidence of true functional hypertrophy in engrafted segments.

Now, it may be said at once that the experimental work of suture, repair, and anastomosis of blood vessels has been surgically a success. The immediate results have satisfied clinical requirements—good pulse, warmth of the part, maintenance of function. Permanency has also been demonstrated. One of

[1] *Blood Vessel Surgery and its Applications.* By C. C. Guthrie, M.D., Ph.D., Professor of Physiology and Pharmacology, University of Pittsburgh. London: Edward Arnold. 1912.

Guthrie's dogs had reversed circulation of arterial blood in one of the external jugular veins for more than five years; another dog was living in good condition with active circulation through a carotid artery into which a segment of formaldehyde-fixed vena cava of another dog had been engrafted three years before.

Experimental investigation has proceeded also in another direction—in the artificial production of anaemia and hyperaemia. In the operation of ligature of thyroid arteries in goitre the principle of the establishment of artificial anaemia is already applied in surgery. Then partial or complete occlusion of arteries has been accomplished quite readily by suture and by means of aluminium bands devised by Halsted. Metallic bands have been applied fourteen times at least to various large arteries in the human subject, in the treatment of aneurysm, and as a preliminary step to removal of malignant tumours. They may be applied under local anaesthesia and can be tightened or loosened according to the effects produced. The study of hyperaemia has been carried out by Guthrie and Ryan in noting the marked anatomical changes which occur in enlarged thyroid glands of dogs after alteration of the circulation. The results in this instance have been on the whole indefinite and not easy to explain, but it did seem as if tying the thyroid veins brought about amelioration or disappearance of general symptoms of thyroid disease. Tuholske and Werelius performed the operation on the human subject with good results.

Perhaps the most startling developments of blood-vessel surgery are to be found in consideration of transplantation of tissues. Both Guthrie and Jeger[1] give full details of the technique of various transplantation operations. The new methods of suture of blood vessels permits the moving about of organs in a way hitherto undreamed of. Guthrie confesses that the results of transplantation actually achieved are by no means so satisfactory as might be anticipated, considering the great activity of the last five or six years in this direction of investigation. But it is reasonable to hope that results of great moment, from both the experimental and the practical standpoints, will be achieved, and that it will be possible to accomplish permanent combinations of animal tissues ranging from parabiosis, or the engrafting of two animals together, to small graftings of structures of the adult body isolated from other tissues. By this method physiological phenomena may be explained and light thrown on many of the problems of relationships of organs, growth, decay, heredity, and in the end definite surgical laws may be laid down.

The kidney lends itself well to transplantation. Ullmann was the first to remove and transplant a dog's kidney into the cervical region, uniting the renal to the carotid artery and the renal vein to the external jugular vein; the kidney secreted for a time after the operation. Carrel and Guthrie have perfected this operation, and have actually transplanted both kidneys by removing and engrafting segments of the aorta and vena cava bearing the renal vessels, and have succeeded in keeping dogs and cats alive for weeks after transplantation *en masse* of the whole renal apparatus from one animal to another of the same species. An animal has been kept alive for months with its own renal tissue after it had been removed and replanted. In another instance one kidney was removed from a cat, a kidney from another cat introduced, and vascular and ureteral connexions established; the animal did well, but a year later its remaining kidney was taken away, with the result that death from renal insufficiency took place in a few days. At the autopsy it was found that in the engrafted kidney only traces of normal structure remained. Transplantation of ovaries, of thyroids and parathyroids, of legs, even of the heart, has been performed. Reimplantation of amputated limbs of dogs has given astonishing results; the circulation has been thoroughly restored, so that in one case the limb was warm twenty-four hours after operation, but fifty hours after, gangrene seemed inevitable, and the dog was killed with chloroform; and in another experiment ten days elapsed before it was determined that the reimplanted limb could not be saved.

Definite conclusions may not be drawn from these achievements, except to say that not yet can amputated limbs be reimplanted and live usefully, nor healthy kidneys from one subject be put in place of others unhealthy. But ten years ago people would not have believed that motor cars could cover 100 miles in an hour, or that men would fly from London to Paris or over the Alps, and yet these feats are no longer wonderful. No one will attempt to prophesy what surgery may be able to do in another decade.

[1] *Die Chirurgie der Blutgefässe und des Herzens.* Von Dr. Ernst Jeger. Berlin: August Hirschwald. 1913.

OLD EXPERIMENTS AND MODERN MORALS.

In the notice of the International Congress of Physiologists and of the publications presented to its members we omitted to mention a very interesting fasciculus issued by that admirable historical publication *Janus*, edited by Professors Nieuwenhuis and van Leersum of Leiden. It would be the more ungrateful to leave it unmentioned because it is written in English and is largely concerned with the work of Englishmen. It is entitled *Old Physiological Experiments*, and the experimenters are Galen, Harvey, Stephen Hales, Robert Hooke, Leonardo da Vinci, Malpighi, and Leeuwenhoek.

Professor van Leersum, who holds the chair of the history of medicine as well as that of pharmacology in the University of Leiden, is the author of this bundle of short essays, which all touch on the history of the doctrine of the circulation of the blood. He has illustrated them by reproductions of original drawings, and by a photograph of the portrait of Harvey in the possession of Mr. D'Arcy Power. Of Stephen Hales, the parson of Teddington, dear to Pope who always loved to see him—"he is so worthy and good a man"—Professor van Leersum says that he was a born experimenter, and, moreover, possessed the laudable tendency to express everything he observed in measure, number, and weight. "The most likely way," Hales wrote, "to get any insight into the nature of those parts of the creation which come within our observation must in all reason be to number, weigh, and measure. And we have much encouragement to pursue this method of searching into the nature of things from the great success that has attended any attempts of this kind." His own great success was in determining the blood pressure, and he only failed to make a satisfactory estimate of the number of capillaries in the body owing, as Professor van Leersum shows, to an error in his arithmetic, for the principle on which his calculation was based was correct.

The next experiments to which Professor van Leersum refers are those of Robert Hooke on respiration. Hooke, who was born in the Isle of Wight

in 1635, and died in 1703 at Gresham College, where he had long been professor of geometry, was a man who diffused his energies over a multitude of subjects, but, it is said, would have anticipated Newton in establishing the theory of gravitation had he possessed the necessary mathematical skill. He made many physiological experiments, the most remarkable being one demonstrated to the Royal Society, when he showed that a dog could be "kept alive by the reciprocal blowing up of his lungs with bellows, and they suffered to subside, for the space of an hour or more, after his thorax had been so displayed (by cutting away the ribs and diaphragm), and his aspera arteria (trachea) cut off just below the epiglottis, and bound on upon the nose of the bellows." The demonstration showed also that the dog fell "into convulsive motions by ceasing to blow the bellows and permitting the lungs to subside and lie still," and could be suddenly revived "by renewing the blast, and consequently the motion of the lungs." All this seems nowadays very obvious, but Hooke, in seeking to convince his contemporaries, had not a clean slate to write on. They were obsessed with the theory that "the motion of the lungs was necessary to life upon the account of promoting the circulation of the blood." Hooke ended his demonstration by showing that the dog could be kept alive by a continuous current of air distending the lungs, provided that it was allowed to escape through punctures made at their surface. By this demonstration Hooke not only exploded an erroneous theory, but laid the foundation for the practice of artificial respiration.

The slowness with which even the most brilliant observers appreciate phenomena passing under their eyes is illustrated by Professor van Leersum's conclusion that Malpighi, though he saw the capillary circulation in the frog's lung and concluded that the arterial system passed into the venous by means of a still finer network, and that the blood does not leave its channels anywhere, nevertheless did not fully appreciate the significance of what he saw. This honour Professor Leersum claims, and the claim used to be generally admitted, for his countryman, van Leeuwenhoek, whose most conclusive experiments were made on the tail fin of the eel, the animal being dropped head first into a narrow tube. "When I fixed these small eels before the glass," he wrote in his letter to the Royal Society (1696), "and fixed my eye upon the fin near the tail, I saw with greater admiration than ever I did in my life before the circulation of the blood, and that in so many sundry places; so that if I should delineate the little space composed thereof it would not seem credible to most men." The observation is so striking that Professor van Leersum recommends it to be shown to students, for, "better than a long discourse, it will contribute to their admiration of the great ingenuity, the inexhaustible patience, and the keen eye of the simple illiterate and unlearned janitor of the alderman at Delft."

Professor van Leersum's essays have more than an archaeological interest. They contain at least two lessons for the present day. One is that experimenters of to-day should be careful to start where their predecessors left off—that is to say, they should take care to make themselves acquainted with the historical literature of the subject, and the author quotes with approval a recent dictum of an eminent physiologist, who said: "A man has a right not to be a great discoverer and to fail to make great discoveries, but he has not the right to be ignorant of what has been said by his predecessors." The essays afford some curious instances of time and energy spent in doing what has been done before in ignorance of the previous work, and when this happens there is a great temptation to the modern discoverer to ignore his forerunner, a temptation, it would appear, not always resisted.

The second lesson is that neglect of the experimental method in biology, including physiology and pathology, has always meant stagnation; dogma replaces beliefs founded on the solid basis of experimental observation, and we find not only that progress is stopped, but that dogma becomes an obstacle even to correct observation, so that men do not see what is going on under their eyes, and that even when a genius arises who goes back to Nature, his contemporaries do not at first understand his demonstrations owing to the obsession of the preconceived idea. Medicine has frequently suffered from this cause, and the author quotes a passage from the address given by Virchow to the International Medical Congress in London in 1881 on the value of pathological experiments. The great pathologist said that "for a thousand years the sick and the healthy were observed with diligent assiduity, and most valuable material was with much discernment gathered together; but in this way no advance beyond 'symptoms' was made. What was perceived was the sign of an internal happening, but that was not perceived, and at the outset it was supposed was incapable of being perceived."

When speculation has replaced the experimental method, progress has again and again come to a dead stop, and it has not been until resort has once more been made to the experimental method that medicine has been given an impetus in the right direction. The following passage, quoted from the introduction to these essays, is all the more striking because it comes from one who has devoted so much attention to the study of medical history: "However useful the study of the dogmas and systems, which side by side and one after the other have prevailed on medical thought, may be for the history of medicine and especially for the history of culture, the real progress of medicine can practically only be learnt from following the long series of experiments, which have brought to light so many secrets of nature. For this task he, who may call himself 'minister' of that science which is beyond others experimental, namely Physiology, is pre-eminently qualified. More than anybody else he can appreciate the great measure of genius and sagacity, which has been devoted to the problems of Life, and admire the firm perseverance, with which our predecessors, often under very unfavourable circumstances and with only extremely insufficient appliances, have pursued this distant aim."

MEDICAL ASPECTS OF THE CENSUS PAPER.

It is a far cry to 1921, the year in which the next census will be taken, but preparations for such a gigantic undertaking must be made well in advance. The attention of the Council of the Association has been called to what is considered to be a defect in the last and previous census papers. Previous to 1911, in the column headed "Infirmity," the following request is made, "If any person included in this Schedule is: (1) 'Totally deaf' or 'deaf and dumb'; (2) 'totally blind'; (3) 'lunatic'; (4) 'imbecile' or 'feeble-minded,' state the infirmity opposite that person's name, and the age at which he or she became afflicted." In previous census papers the description in (2) was "blind" without any adjective. It has

been suggested to the Council that the addition of the adjective "totally" has considerably lessened the value of the return as regards the blind, both by unduly limiting the inquiry, and by making it more difficult for the person filling up the paper to answer correctly. The arguments in support of this opinion were very fully set out by Mr. Bishop Harman in a paper printed in the BRITISH MEDICAL JOURNAL of November 4th, 1911, p. 1174. It is held that whereas information as to the number of totally blind is mainly of an academic value, information as to the partially blind, that is, blind for practical purposes, would be of considerable economic value, and it is therefore suggested that the Association should ask the Government to make the future census paper read (2) (*a*) Partly blind, (*b*) totally blind. The point is under the consideration of a committee of the Association, but it has been thought that members of the profession might have other suggestions to make as regards the contents of the column headed "Infirmity," which could be considered at the same time, with a view of making, if found necessary, practical suggestions to the Government for their consideration in the drafting of the next census paper. Any practitioner having views on this question is asked, therefore, to send them to the Medical Secretary of the Association, and may be assured that they will receive careful attention. It is necessary, however, that any suggestions for additions to or alterations of this column in the census paper should be capable of being stated very briefly and of being answered by the average man with no technical knowledge, otherwise they stand little chance of acceptance.

TUBERCULIN ON ITS TRIAL.

THE discussion on the therapeutic value of tuberculin at the recent Conference on Consumption has served to record the considered opinions of experts, many of whom have had large practical experience of its use. The outcome of this valuable pronouncement should be to put tuberculin into its proper place as a useful weapon in the armoury of the physician and to deprive it for ever of any pretensions to curative powers of its own. As an adjunct to rational hygienic treatment it has been shown to be associated with remarkable improvement in certain cases, and to have thus justified the faith reposed in it both by doctor and patient. It is probable, however, that many physicians would be prepared to echo a remark let fall at the conference by Dr. E. Rist of Paris, that he never saw a patient doing well with tuberculin without remaining in doubt whether he would not have done as well without it. As an adjunct, used with care and discretion, tuberculin has undoubtedly found favour with many of its users, and an important contribution to the general stock of experience is contained in a statement read to the conference by Dr. John Rennie, Medical Superintendent of the Sheffield Tuberculosis Dispensary, with regard to tuberculin treatment in Sheffield. At that institution the system has been adopted of postponing the use of tuberculin until a period of sanatorium treatment has been tried for several months. By this means each case is fully studied, each patient is educated in the essentials of hygienic life and brought to as sound a condition of health as such means will allow. He is then kept under observation for many successive months, receiving tuberculin treatment at the Tuberculosis Dispensary, but living his ordinary round of life and following his usual occupation. A large number of cases are already on record, and great care has been exercised to eliminate sources of error in forming conclusions. Reference is made in the report to the general results observed in several hundreds of cases, and a tabular statement of the details of 52 typical cases is presented for analysis. Many interesting facts may be deduced from these tables, but the broad conclusion is, that after treatment of twelve months on the average, a large proportion of the patients whose capacity for work was previously impaired, were able to regain it, while the physical evidences of their disease were diminished or even abolished. Similar conclusions have been arrived at by analysis of statistics of chest hospitals, sanatoriums, and other tuberculin dispensaries, and it is not possible to give a decisive verdict as to the relative merits of any of them. The opinions, therefore, of those who have had long personal experience are entitled to more than ordinary consideration. The voice of the English medical officer of health does not appear to have been adequately heard at the late conference. It can speak with a wealth of accumulated experience at the present time, and would probably give powerful support to the statement put forward by Dr. Rennie, and agree that "the results have been so far encouraging that we have felt justified in giving the treatment a greatly extended trial." But it would probably be no less generally admitted that tuberculin is no cure for tuberculosis, either in man or in animals; that when used with due caution it may be followed by clinical evidence of general improvement in health and of local quiescence of disease, and that these results may in some instances be much more marked than could reasonably be expected under hygienic treatment alone. The Sheffield system, whereby the patient is placed in the best possible conditions for subsequent treatment by tuberculin, is worthy of thoughtful consideration, but it must obviously depend for success upon the co-operation of the patient himself. A course of tuberculin entered into with faith and enthusiasm is little likely to influence the course of incipient disease for anything but good. Where the mischief is firmly established these influences may also be potent, and the optimism of the patient may sometimes render him blind to the fact that his disease is progressing as rapidly as before. There is abundant evidence to show that the action of tuberculin increases in uncertainty, and may even become dangerous, in proportion to the degree of tuberculosis that is present. A period of preliminary hygienic life in a sanatorium, as practised at Sheffield, enables the tuberculin treatment to be applied intelligently. The same cannot always be said of the immediate treatment of incipient and other consumptives.

EXTENSION OF THE PREMATERNITY SYSTEM.

As is well known, the Royal Maternity Hospital in Edinburgh has been provided since November, 1901, with accommodation for cases of pregnancy showing one or other of the maladies of gestation; at first a single bed was available, but of late years there has been a ward with four beds in it, called the prematernity ward, ready for the reception of such patients. The success of this part of the work, which may be named the indoor department of the prematernity system, has been so great that within the past few weeks a corresponding work complementary to it has been commenced in the outdoor practice of the hospital. A trained nurse is now ready to visit any pregnant patient in the "district," give advice as to the preparations for confinement, the accouchement outfit, the baby clothes, position of the bed, etc.; make inquiries respecting the health of the expectant mother and take notice of any of the danger signals of the pregnant state (such as headache, oedema of face and fingers, rickety deformities, excessive vomiting, intractable constipation, red or white discharges, etc.). She reports on these matters to the medical staff of the hospital. In cases of grave trouble the patient can be brought for treatment into the prematernity ward; in less serious cases she is seen by one of the resident surgeons and watched over by the nurse in her own home. It may be said that the new departure affects almost wholly married women, who constitute about 98 per cent. of the extern work of the hospital. The hospital gets into touch quite

simply with the pregnant women; nurses attending extern confinements let the patients know that in their next pregnancy they can have one or more visits from the pregnancy—or prematernity—nurse if they wish it. Already there have been instances in which the prodromata of eclampsia have been observed and the urine tested for albumen, obstinate constipation relieved, and troublesome vomiting treated. It will probably be found useful to supply the prematernity nurse with cards containing some simple rules of hygiene in pregnancy and the like. The system is not dissimilar from that which was established in Boston some four years ago. There the Women's Municipal League, working through its prenatal committee, have appointed a specially trained nurse—the prenatal nurse—to visit and supervise pregnant patients. At first she attended women whose names had been given her through the two large maternity hospitals in Boston, but in time women began to apply to her directly, and were by her recommended (when necessary) to go into hospital or have attendance from it. Mrs. Lowell Putnam, who has had much to do with the starting of this scheme of social service, states that since the prenatal nurse began her work eclampsias have been averted, premature labours have diminished in number, and the average weight of the babies at birth has risen; these improvements have been progressive during the four years for which the nurse has been at work. The difference in the Edinburgh system is that the nurse is a member of the staff of the Maternity Hospital itself.

GUY'S MEDICAL SCHOOL.

THE vital energy displayed by the London schools of medicine, in spite of many discouraging circumstances, is of the best augury for the future of medical education in London. We hope to publish in an early number some account of the interesting developments in connexion with the Charing Cross Hospital Medical School, and we have before us the remarkable report of the Dean of Guy's Hospital Medical and Dental Schools. The medical school of Guy's began to reconstruct itself some seventeen years ago, when the department of physiology was built; it was extended in 1910, and meanwhile the anatomical department had been rebuilt, the biological department had been extended, and the Gordon Museum, the department of chemistry, and the department of physics had been built. In 1912 the dental school was rebuilt and extended, and in the same year the department of pathology was built. Last June Mr. Arthur Balfour formally announced the completion of the scheme, and declared the new buildings open. The department of pathology is entirely devoted to teaching and research. Through the generosity of Mr. Robert Gordon, Dr. James Douglas of New York, Sir Cameron Gull, and Mr. Otto Beit, it is provided with endowments for scientific investigation in pathology, and the school is thus able to profit by the constant stimulus afforded by the presence of numerous workers whose whole time is devoted to research. Simultaneously new departments of chemical pathology and of morbid histology have been instituted by the hospital, and as in the case of the department of bacteriology, whose director is lecturer in bacteriology in the medical school, it is intended that the directors of the new departments shall be lecturers in chemical pathology (Mr. J. H. Ryffel) and clinical microscopy (Dr. G. W. Nicholson) in the school. The department of morbid histology has two laboratories, one adjoining the new suite of operating rooms in the surgical building and the other close to the *post-mortem* room. A department of pharmacology has been established and provided with laboratories upon the second floor of the new pathological building; through the continued generosity of the Hon. Mrs. Ronald Greville, the school has been able to provide for the services of a Greville lecturer in pharmacology, Mr. A. J. Clark, M.B., whose whole time will be devoted to teaching and research. Coincidently, a new lectureship in therapeutics has been instituted, and will be held by a member of the visiting staff of the hospital. A new departure in the direction of one of those recommended by the Royal Commission on University Education in London has been made by converting the old operating theatre, which had become unsuitable for that purpose, into a theatre for clinical class teaching. It is provided with an epidiascope, and will greatly facilitate systematic clinical instruction. A related change is the increase in the number of medical registrars, who now number four. In addition to acting in the wards, the clinical laboratory, and the *post-mortem* room, they will have duties in the medical *x*-ray room. The division of the clinical period of study into three terms has been abandoned; clinical lectures in medicine and surgery will be given continuously throughout the year, and a revision of the compulsory ward appointments has been made so as to include some work in the special departments. Important changes have also been made in the dental school. The lecture and laboratory courses have been rearranged and special courses have been instituted. Of a total of approximately £100,000 spent upon the work carried out since 1897 the generosity of the governors and other friends had provided over £77,000. An anonymous benefactor has erected and equipped the new department of pathology at a cost of over £13,000, and an additional sum of £12,000 has been raised during the year by the governors and other friends of the school. On the advice of the Royal College of Physicians and in accordance with the policy of the London County Council to associate the prevention and treatment of tuberculosis with the teaching schools of the metropolis, the governors propose to utilize a convenient site in Newcomen Street, adjoining the hospital, for the purpose of a tuberculosis dispensary, where, under the instruction of the out-patient physicians and surgeons and of the dispensary physician, students will continue to have the widest opportunity of studying pulmonary and other forms of tuberculosis and their prevention and treatment. A scheme has been approved for the scientific treatment of milk and the closer study of diseases of infant nutrition, and a proposal is under consideration to provide an institute in which modern remedial exercises, massage, and Swedish gymnastics will be provided, under the advice of the orthopaedic surgeon, for the correction of deformities.

THE UMBILICUS AS A POINT FOR MEASUREMENTS.

BROCA and other anthropological authorities have laid great stress on the umbilicus as a point from which to make measurement, as it is one of the surest non-bony landmarks of the human body, and lies in a position of high importance for estimating rate of growth and for indicating the site of the viscera behind, above, and below it. Hence the physician has to consider it very often in the course of his clinical work, and to the obstetrician it is of even higher interest. With the above quoted observations Dr. Kakuschkin begins an important article on the topography of the umbilicus in women and newborn children.[1] He considers that with care it is possible to make relative estimates, at least, even in multiparae. In the newborn child the difficulties are less, and without great risk of fallacy the position of the navel as influenced by growth can be estimated, by careful measurements, month after month and year after year. He made several long series of measurements grouped in series, comprising adult women, uniparae, multiparae, with parturient and puerperal patients, and lastly newborn children. He finds that individual variations in the distance from the umbilicus to the ensiform cartilage, to the symphysis pubis, and to the anterior superior iliac spine are very marked, the variation amounting to as much as 14 cm., or nearly 5½ in. All these diameters were

[1] *Monatsschr. f. Geb. u. Gyn.*, September, 1912, p. 278.

higher in old multiparae than the average diameter in an adult woman. Previous pregnancies do not influence these diameters. During pregnancy the lower part of the abdominal wall undergoes the greatest degree of stretching, and in multiparae all the diameters increase much more than in primiparae. The diameter which he found to be increased to the greatest extent in pregnancy was that between the umbilicus and iliac spine, more especially on the left side. The umbilico-pubic diameter increases with the height of the body. The puerperium seems to have a greater influence on the position of the navel than is generally suspected; in the first days after birth the distance from the ensiform cartilage to the pubes falls till it remains rather under the average measurement in the adult woman. In the newborn child the greater its weight the higher will be the relative position of the umbilicus, and in female children it is higher than in males. Kakuschkin makes out that in the fetus at term presenting by the breech the umbilicus lies higher than in a mature fetus which presents by the head.

"SIGNE DU SOU" IN PLEURAL EFFUSION.

NEW physical signs tend to multiply like the lower organisms, and are almost as objectionable when they require great technical skill, and when their significance is ambiguous. A sign, however, which can boast an uninterrupted existence of a decade and more deserves study, especially when two recent and independent publications show that it is easy to elicit and interpret. This sign, called *signe du sou* by Professor Pitres in 1898, has been tested in many cases by Slatowerchownikow,[1] who adopts the following procedure: An assistant presses firmly on the chest with a copper coin, on which he taps with a second coin; the physician applies one ear to the opposite side of the chest, and stops his other ear with one of his fingers. The percussion note is dull and non-metallic when spongy or alveolar tissue occupies the space between the points of percussion and auscultation, and it is loud and metallic when between these points there is a gas-containing cavity. It is also metallic when a homogeneous substance, either solid or liquid, is interposed. On the other hand, it is dull and non-metallic when heterogeneous substances, such as a fluid and alveolar tissue, are interposed. The sign is termed positive when the note is metallic. When a dull area of the chest is detected by percussion, and fluid is suspected, an assistant percusses with coins over this area, while the physician auscultates on the opposite side, his ear travelling downwards till, if fluid be present, he detects a metallic sound at the upper level of the fluid. Slatowerchownikow has tested this sign in 28 cases of pleurisy with effusion, in 11 cases of pneumonia, in 2 cases of dry pleurisy, and in 1 each of pneumothorax, apical phthisis, miliary tuberculosis, and peritoneal tuberculosis. The sign was positive in all the cases of pleurisy with effusion and in the case of pneumothorax; it was negative in the rest. It indicated the upper level of fluid as higher by one to one and a half fingerbreadths than percussion or vocal fremitus, and exploratory puncture confirmed the accuracy of the new sign. It is said to be particularly useful in children when, as often happens, vocal fremitus cannot be tested; and inspection, percussion, and auscultation leave the diagnosis uncertain. Slatowerchownikow describes two cases in which the observations made by percussion, auscultation, and vocal fremitus were identical, but the *signe du sou* was positive in the one, negative in the other. Here again exploratory puncture confirmed the accuracy of the sign. It is therefore not only more accurate than others, but gives definite information when all other tests save exploratory puncture are ambiguous. Its utility is, however, confined to the chest, for the abdominal cavity contains too many heterogeneous media for the presence of fluid in the peritoneal cavity to be thus demonstrated. The reliability of the sign is also extolled by Geza von Hainiss,[2] who has tested it for five years in several hundreds of cases. He describes two forms of metallic sound: the one being heard in hydrothorax, the other in hydropneumothorax; in the latter the sound is vibratory, as when a bell has been lightly struck and then held firmly. In healthy lungs he found that the percussion note was most dull when much lung was interposed between the coins and the ear, and that it became metallic, but never ringing, when only a thin layer of lung, such as exists at the apex, was interposed between the two points. In one of his cases, the ordinary physical signs were not indicative of fluid, which was, however, demonstrated both by the *signe du sou* and exploratory puncture. The presence of only a few cubic centimetres of fluid in the chest is sufficient to make the sign positive; in one case the sign was limited to so small an area that its significance was questioned, but an exploratory puncture yielded a few cubic centimetres of serous fluid. The note now became only faintly metallic, and next day it was dull. When another exploratory puncture was made five days later, no fluid was found. Hainiss also emphasizes the value of this sign in children.

[1] *Deut. med. Woch.*, No. 27, 1912.

TUBERCULOSIS IN DOGS.

TUBERCULOSIS is a comparatively rare disease in the dog, and when it occurs is, according to Cadiot, almost invariably due to infection from a human source. In most recorded instances the animal has belonged to a person suffering from tuberculosis, and, remembering the dog's inquiring mind and his peculiar taste, it is not difficult to understand how infection may be conveyed to him where there is carelessness in expectoration or the disposal of sputum. It should be added that among the cases in which Cadiot could not thus account for infection a considerable proportion occurred among animals belonging to the proprietors of cafés or wine-shops, and were due, he thought, to the contamination of the floors by tuberculous customers. Tuberculosis when it occurs in the cat is also usually of human origin. In tuberculosis in the dog the lungs are affected in about three-fourths of the cases, the tracheo-bronchial and mediastinal glands in about half, the pleura nearly as frequently, the pericardium and the peritoneum more rarely. The intestines sometimes become the seat of granulations, and the liver, spleen, and bladder may be affected. Tuberculous ulceration of the skin, when it occurs, is usually secondary to the infection and breaking down of glands. The most constant symptoms are emaciation and loss of strength, but in the later stages cough, which may be attended with the expulsion of matter, and enlargement of the liver and spleen may be observed. The tumours of the abdominal organs, superficial adenitis, and ulcers of the skin, may be mistaken for cancer. Cadiot, however, asserts that cancer is very rare in the dog, and that nine times out of ten, or more often, wasting and the appearances attributed to it are, in fact, due to tubercle. He does not believe that the tuberculous dog is often a danger to man. The safest course is to destroy the animal, but even when the owner will not consent the observance of simple precautions ought to obviate all risk.

LIMITED PAYMENT LIFE POLICIES.

THE earned income of a professional man is directly dependent on his personal exertions, and when these cease that income ceases also. A merchant may retire from participation in the work of his office, and yet draw a continuing income from the firm's profits, but a doctor, when the time comes to retire from active work, cannot look forward to further fees. In selecting a life policy, therefore, it seems that the medical man should arrange to be

[2] *Wien. med. Woch.*, No. 1, 1913.

relieved from payment of further premiums at a definite age, somewhere in the period between 60 and 65. This result can be attained by an endowment assurance, where the capital sum itself becomes payable at a fixed age, but for this a proportionately heavier premium has to be borne than if a whole-life policy with premiums limited, and ceasing at the selected period, were substituted for it. If the capital sum is taken, the money has probably to be reinvested, and in these days may readily suffer some capital loss, while a carefully-chosen limited payment participating policy goes on increasing by steady bonus additions, although no further premiums are being paid. A liberal cash value can also be obtained should circumstances arise to call for it, and the policy in this way fulfils the three desiderata of (1) low premium, (2) cessation of the premium at a fixed age, (3) cash payment if required. Such a policy seems well adapted to meet the conditions and circumstances of a doctor's life and future outlook, when he is considering the most advantageous way to arrange his life assurance. The Medical Insurance Committee, 429, Strand, London, will be pleased to furnish full information as to the scheme outlined.

UNQUALIFIED PRACTICE AND THE LAW.

A CURIOUS exemplification of the state of the law with regard to the practice of medicine and the tenderness with which its administrators handle unqualified practitioners is afforded by the history of such a one brought out during the course of an inquest and subsequent proceedings before the magistrates at Croydon, reported elsewhere in this issue. The main facts of the case were perfectly clear, and were, indeed, admitted by the defendant. He lived in a house bearing a brass plate inscribed with the name "Dr. Sparling," and adorned with a red lamp bearing the word "Surgery," a notice of hours of attendance, and the representation of a pair of spectacles. The only attempt at defence was that the defendant claimed to be an optician and to have certain relations with a qualified medical man, which he described as a partnership, but which the medical man himself defined as friendship, asserting that anything of the nature of a partnership had ceased. He declared that Mr. Sparling acted as his dispenser and surgery attendant, but the evidence seemed to show that Sparling did at any rate a certain amount of practice independently. The medical practitioner stated that the arrangement was made to enable Mr. Sparling to get a qualification, but it appeared to be admitted by the defendant that, though he had attended Polytechnic classes, he had made no attempt to fulfil the requirements of the medical curriculum. Mr. Hempson, who represented the Medical Defence Union before the magistrate, pressed for the maximum penalty, and the Bench recognized that it was a very serious case. Nevertheless, they let the defendant off by imposing a fine of 5 guineas and £4 14s. 6d. costs. Yet there seems to be no doubt that the persons in the neighbourhood who consulted Sparling believed him to be a qualified practitioner, a conclusion to which they might have been partly led by the use of the title of "Dr." on his house. The story as it stands is very unsatisfactory, and there are some points about it which still require to be cleared up.

MESOTHORIUM BURNS.

IN connexion with the account given by our Berlin correspondent[1] of the discussion at the Berlin Medical Society, and the results of the use of *x*-rays and mesothorium in the treatment of malignant disease of the uterus, and in connexion also with the report published on August 23rd, 1913, p. 451, of the discussion at the joint meeting of the Sections of Radiology and Gynaecology of the International Congress of Medicine, it may be interesting to call attention to a report recently published of a demonstration given by Professor Bumm at a meeting of the Obstetrical Society of Berlin.[2] He exhibited some cases of burns caused by mesothorium employed therapeutically. Bumm used three silver tubes 0.06 mm. thick, each containing from 20 to 60 mg. of mesothorium. They were introduced into the posterior vaginal fornix or into the canal of the cervix either bare or covered by an adrenalin tampon. The application lasted from three to over twenty-four hours. In four instances small superficial necroses about the size of peas developed in the vaginal vault, and did not heal speedily. In one case, after 20 mg. of mesothorium had been applied twice for twenty-four hours, at each application an abscess developed; it contained pus absolutely free from germs, but there was slight fever, and a hard deposit developed as the abscess healed. In other patients Bumm had used similar amounts of mesothorium for as long a period with no bad effects, and women under his care with cancer of the cervix had tolerated 20 to 50 mg. for 130 hours or over, indeed for 314 hours, without any local or general reaction except superficial necrosis of the cancerous portion. Bumm concludes that mesothorium is tolerated very well by some women and very badly by others. The warnings of Professor Wilhelm Nagel at the Congress as to the soundness of the principles on which the treatment rests, and the experience of Professor Bumm recorded above, are clearly of practical importance.

[1] BRITISH MEDICAL JOURNAL, June 21st, 1913, p. 1347.

[2] Ueber Mesothoriumverbrennungen. *Zentralbl. Gynäk.*, August 16th, p. 1235.

THE LANE LECTURES.

THE Lane Medical Lectures, delivered by Sir Edward Schäfer at the beginning of this month in the medical department of the Leland Stanford University, San Francisco, consisted of five lectures dealing respectively with internal secretions generally, with the thyro-parathyroid glands, the adrenal glandular apparatus, the pituitary body, and the influence of internal on other secretions. In 1896 the late Dr. Levi Cooper Lane founded this course of free lectures on medical subjects to be given "by men distinguished at home or abroad for their work in either medicine or surgery." They are intended for medical students and the medical profession at large. The course just given is the fourteenth. Previous courses have been given by Sir William Macewen (Glasgow), the late Mr. Christopher Heath (London), Sir T. Clifford Allbutt (Cambridge), the late Dr. Nicholas Senn (Chicago), the late Sir Michael Foster (Cambridge), Sir Malcolm Morris (London), Sir Charles Ball (Dublin), Dr. Oscar H. Ellis, Dr. William H. Welch (Baltimore), Sir Patrick Manson, Dr. J. C. McVail (Glasgow), Dr. Reginald H. Fitz (Boston), and Dr. Ernest Fuchs (Vienna).

THE Section of the Royal Society of Medicine for the History of Medicine, of which Sir William Osler is President, has arranged three lectures, open to all members of the profession and to medical students, to be given before Christmas. The first will be delivered on Friday, October 10th, by Professor Morris Jastrow, Librarian of the University of Pennsylvania, on Babylonian medicine; the second on Thursday, October 30th, by Professor Elliot Smith, of Manchester, on the contributions of ancient Egypt to the history of medicine; and the third on Wednesday, December 17th, by Professor Richard Caton, of Liverpool, on the health temples of ancient Greece and the work carried on in them. The lectures will be given at 5 p.m. on each day, and will be illustrated by means of the epidiascope.

Scotland.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

GLASGOW SANATORIUM.

THE Health Committee of the Corporation of Glasgow has recommended the Corporation to purchase the Bellefield Sanatorium, which was opened in 1904 by the Glasgow and District Branch of the National Association for the Prevention of Consumption, and has since been carried on by it. This step has been rendered necessary by the regulations of the Local Government Board declaring tuberculosis to be a notifiable disease, and the obligation thus laid upon the local authorities to provide accommodation for patients suffering therefrom. The terms proposed for the transfer are as follows:

The Corporation offers the sum of £7,500 for the sanatorium and grounds attached, and all furniture and fittings, on the understanding that the directors may devote the purchase price to such purposes as they are authorized and think fit, and that an alternative offer of £10,000 be made, on condition that the directors oblige themselves and their successors to devote the whole sum, and the revenue accruing therefrom, for behoof of persons residing in the city suffering from tuberculosis, and that by way of monetary grants or otherwise, to such persons as require such assistance over and above the treatment provided for them by the Corporation under their statutory powers, and further, that it be made a condition of the offers that the Corporation obtain the necessary consent of the Local Government Board for Scotland, and that the directors obtain, at their own expense, the sanction of the Court of Session, if required, to the sale.

The recommendation of the Health Committee will be considered by the Corporation at its regular meeting this week.

Bellefield Sanatorium is a well-equipped building, or rather set of buildings, situated in Lanark, and providing accommodation for 52 patients. The grounds extend to twenty-three acres, and close upon 1,000 patients have received treatment since it was opened. If ratified by the Corporation, this will be the second purchase by the city of Glasgow for the purpose of treating tuberculosis. The estate of Southfield, near Mearns, was recently acquired at a cost of £17,000; it extends to 321 acres, and comprises three farms and a large mansion house. The mansion house is at present being converted into a sanatorium. The isolation hospitals at Ruchill and Robroyston will also be used for cases of phthisis.

HOUSING AND PUBLIC HEALTH IN GLASGOW.

In the annual report submitted to Glasgow Corporation by Mr. Peter Fyfe, the chief sanitary inspector of the city, the problems presented by the density of the population and its bearing on public health are dealt with. The population of Glasgow is estimated at 1,015,165. The city extends nine miles from east to west, and seven miles from north to south, and despite the recent extension is still a closely compacted city with a population of nearly 53 persons to each acre. Compared with other large towns Glasgow is unfavourably situated in this respect; Liverpool has only 45 persons to the acre; Manchester, 33; Birmingham, 19; Leeds, 21; Sheffield, 19; Edinburgh, 29; Dundee, 35, and Aberdeen, 26. The central congestion of the city cannot be relieved by any system of town planning, and decentralization schemes are barred because of the lack of suitable free areas within the city boundaries. Over 3,000 cases of overcrowding in houses were dealt with during the past year, 840 being of such a nature as to require police-court proceedings. The suggestion is made that the solution of the problem is to be found in a policy of wise purchase of old properties with a view to internal reconstruction on modern lines. The report also deals with the question of unwholesome food, the cleanliness of dairies, and the progress which has been made during the year in the crusade against smoke with a view to air purification. A step in the march towards the ideal of a smokeless city is due to a large engineering company in the city, which by a recent reconstruction of its works and the adoption of up-to-date appliances, has shown that industrial activity and smoke production do not necessarily go hand in hand.

SCARLET FEVER AT ARBROATH.

A difficulty has arisen in connexion with the outbreak of scarlet fever which began at Arbroath a few weeks ago. The Town Council, at a special meeting on September 17th, considered the attitude of Dr. Arthur D. Yule, the Medical Officer of Health for Arbroath, on the resolution of the Council that the Milne or domiciliary treatment should be adopted with scarlet fever patients, in view of the fact that the epidemic hospital was at present overcrowded. Dr. Yule, who was in attendance, declined to organize and supervise the carrying out of that treatment; and the clerk was instructed to intimate to the Local Government Board the resolution of the Council to adopt the Milne treatment (daily inunction of oil of eucalyptus, etc.).

PERTH INFIRMARY.

A bazaar was held in the City Hall, Perth, on September 18th, 19th, and 20th, in aid of the furnishing of the new infirmary buildings at present in course of erection. Mr. C. A. Murray, of Taymount, Chairman of the Board of Directors, presided at the opening ceremony, and the Marchioness of Tullibardine declared the bazaar open. There was a large and distinguished gathering. The bazaar was organized by the Perth Royal Infirmary Ladies' Auxiliary. On the second day Mr. A. F. Whyte, M.P., presided, and the Countess of Ancaster opened the bazaar.

RESISTANCE TO THE INSURANCE ACT IN TURRIFF.

The resistance to the Insurance Act in Turriff has, according to the *Aberdeen Evening Gazette*, come to an end by the conviction of a farmer described as the ringleader and the imposition of a fine of £15 and a decree for £3 19s. 10d., being the amount of unpaid contributions. An obliging correspondent informs us that we were incorrect in describing Turriff as in north-west Aberdeenshire; it is in the north-eastern part of the county, about ten miles south-east of Banff. Moreover, there is, he says, no authority for the form "Turray"; the Scottish spelling is "Turra," and the town, which is the possessor of an eleventh-century church, has been known under that name since 1272.

Ireland.

[*FROM OUR SPECIAL CORRESPONDENTS.*]

THE HOUSING QUESTION IN DUBLIN.

FURTHER light has been thrown on the condition of the housing of the poor in Dublin tenements by evidence given in the Dublin police-courts last week that ten people were living in one room; they consisted of a man and his wife, his brother, and seven children, ranging in age from 13 years to 12 months, one of the latter being in the last stages of consumption. As mentioned recently, there are 20,000 families in Dublin who occupy single-room tenements. A special Housing Committee of the Corporation, appointed at the beginning of this year, has prepared estimates for the erection of three-roomed two-story cottages and two-roomed flats to be let at rents of from 5s. to 3s. a week. A certain amount of work has already been done; some areas have been acquired, and on one 45 three-roomed two-story dwellings have already been completed at a cost of approximately £10,000. The committee has schemes for dealing with eight more areas under consideration. If all these schemes are carried out over 1,500 new homes will be provided, at an estimated cost of nearly £400,000. According to a statement made by the Lord Mayor, under present conditions it would take about fifty years and cost over £4,000,000 to obliterate the tenement houses and substitute for them self-contained sanitary houses.

DEATH UNDER CHLOROFORM ADMINISTERED BY A NURSE.

An inquest was held in the Lisnaskea Workhouse on a man, a labourer aged 35, who died while undergoing an operation on the previous day. It appeared that the patient was suffering from fistula in ano, and had been in the workhouse hospital for some time; he was placed on the operating table, and a nurse administered chloroform; after a few deep inhalations the patient went into a convulsive fit, and in spite of the doctor's efforts died on the table. The jury attached no blame to anybody. At a subsequent meeting of the guardians an acrimonious discussion arose, and the nurses were blamed for not having the patient seen by a clergyman before the operation; a

motion censuring the nurses was proposed, but was afterwards withdrawn. If any vote of censure was required it was for the practice of allowing a nurse to administer the anaesthetic, a custom which is due entirely to the desire to avoid paying a fee to a qualified anaesthetist. This practice is far too common in Ireland; even if a certain amount of extra expense is thereby entailed on the guardians, no unqualified person should be allowed to give an anaesthetic unless in a case of emergency or absolute necessity.

LOCAL GOVERNMENT BOARD AND DOCTOR'S FEES.

A curious dispute has arisen in the Granard Union about a fee claimed by the dispensary doctor. Some time ago Dr. O'Dwyer, Medical Officer of the Granard Dispensary District, was granted his usual holidays, and while on leave his assistance was requisitioned on an urgent operation in a dispensary case. The guardians granted a fee of two guineas, but the Local Government Board refused to sanction it because they said that as Dr. O'Dwyer was on leave at the time payment would be contrary to the regulations. It was stated at the last meeting of the guardians that if Dr. O'Dwyer proceeded against the guardians they would have to pay the fee with costs. They therefore decided to again ask the Local Government Board to sanction the payment of the fee.

POOR LAW GUARDIANS AND DOCTOR'S FEES.

At a recent meeting of the Callan Guardians a letter was read from Dr. Marnell requesting that the balance of a fee of £2 for a lunacy fee should be paid him. It appears that the magistrates made an order for a fee of £2, but by a resolution of the guardians the fee is limited to one guinea, and this sum was sent to the doctor. The guardians decided to refuse the application, though it was stated that as the magistrates had made an order for a fee of £2 the guardians were bound by law to pay it.

England and Wales.

[FROM OUR SPECIAL CORRESPONDENTS.]

LONDON.

RADIUM FOR POOR LAW INFIRMARIES.

THE Wandsworth Board of Guardians has resolved to ask the Local Government Board to authorize the establishment of a special radium department, under the control of the Metropolitan Asylums Board, for the treatment of persons in the Poor Law infirmaries of the unions.

TUBERCULOSIS SCHEME IN LAMBETH.

Dr. Priestley has reported to the Lambeth Borough Council that the Central Tuberculosis Dispensary, Effra Road, Brixton, is in working order, and since July 23rd has dealt with 122 new and 165 old patients. At the dispensary connected with the out-patients' department of St. Thomas's Hospital 261 new cases from Lambeth have been entered for treatment. Of the 383 new patients, 183 were insured persons, and it was decided to apply to the Insurance Committee for the County of London for a grant in respect of their treatment.

WALES.

THE ALEXANDRA HOSPITAL AND CONVALESCENT HOME, RHYL.

WE received a little time ago copies of correspondence exchanged recently between the Managing Committee of the Royal Alexandra Hospital at Rhyl and one of its honorary medical staff, and also have in our possession a copy of the last annual report of the institution in question. These various documents tell a story which, summed up, is as follows: The institution, which was rebuilt in 1900, has 60 beds for ordinary cases and 100 for convalescents. The beds are intended primarily for children, but there is a small accident ward for men, while women when suffering from acute diseases or accidents are also admitted. Apart from the honorary medical officers, the staff consists of a lady superintendent, 4 sisters, 12 nurses and 10 probationers; a private nursing institute with a staff of 20 nurses is attached. Nearly half the work is surgical, and there is no other hospital in the neighbourhood. To this institution the medical officer in question endeavoured one evening to obtain admission for a child suffering from appendicitis. An immediate operation he considered was imperative, and finding it impossible to carry out the procedure at the child's own home, wanted to have it admitted to the hospital and operate on it therein forthwith. Hence he telephoned to the matron to this effect; but though seemingly she did not actually refuse admission to the child she refused to entertain the idea of an immediate operation, on the ground that no nurse was available at that hour of the night, that the electric light in the operating room was bad, and there were no facilities for getting hot water. This was about 11 p.m.; the child died next day. On the medical officer bringing the matter to the notice of the managing committee in a letter, this body held a special meeting and unanimously adopted a reply in which it justified the matron's action on much the same grounds as those given by herself, and further supported it by stating that at the time application for admission of the child was made the hospital engineer had banked up his fires and gone home to bed; "consequently the steam required to supply the heat necessary for a serious operation under proper surgical conditions" was not available. It also endeavoured to turn the tables on the medical officer by suggesting that he ought to have seen the need for operation much earlier. On this correspondence the medical officer, whose letters were written in exceedingly temperate language, makes practically no comment beyond pointing out that on a previous occasion much the same thing occurred. In view of the fact that each of the parties of this story has, so to speak, told his own tale, and that therefore we are not dealing with a mere *ex parte* statement, the story may be written down as constituting, on the whole, one of the most remarkable incidents in connexion with hospital administration that we have ever encountered. The attack of the committee on the medical officer may be passed over as irrelevant, but the remainder of the story suggests a number of questions to which we can find no answers. Rhyl is a town of some 9,000 or 10,000 inhabitants, and the Alexandra Hospital appears to be the only hospital in it. It seems clear that, whatever else it may be, the Alexandra Hospital is certainly a general hospital so far as children are concerned; it ought therefore to be in a position to undertake an operation on a child at any time of the day or night when it may be required, and when the services of one of its medical officers are available. What right has it to ask for additional public support, as it did at its last annual meeting, if its affairs are administered on such lines that its managing committee has to admit that neither hot water nor proper lighting can be obtained during certain hours of the twenty-four? Should it be concluded that Rhyl possesses neither electric light, nor gas, nor oil heating appliances, and is still in the tallow-candle stage of civilization?

India.

[FROM OUR SPECIAL CORRESPONDENTS.]

SANITATION.

Agra and Oudh.—The amount available for the special grants which the Government of India places at the disposal of the United Provinces Government for expenditure on urban sanitary works has just been announced. This year it is 15 lakhs (in addition to the recurring grant of 5 lakhs). Of this sum 12½ lakhs is to be distributed, the balance being kept in reserve for general purposes or as initial grants to the improvement trusts for Cawnpore and Allahabad, which it is hoped will shortly be established. Lucknow receives Rs.1,50,000 for sullage farms; Allahabad a similar amount for the drainage pumping station, the Daraganj drainage scheme, and the unfiltered water supply project; Benares Rs.2,35,000, for various purposes; Cawnpore Rs.1,22,000, mainly for drainage works; Fyzabad and Ajedbya Rs.1,50,000, and Hardwar a lakh; Agra, Mussoorie, and other towns also come in for a share.

Rangoon.—The Municipal Committee has resolved to take power to give effect to an improvement scheme in certain quarters of Rangoon. The city is fairly well laid

out at the centre, where it has broad streets running parallel and at right angles to each other. But in some of the outlying parts the areas are congested and the owners obstructive.

Assam.—The recorded birth-rate of Assam during 1912, excluding the hill districts in which registration is imperfect, was 32.16 per mille, this representing a slight improvement over that of the previous year and the quinquennial average. The death-rate rose from 23.61 to 25.04 per mille, but was 2.64 less than the quinquennial average. The death-rate from cholera was lower than the average of the previous decade, but severe outbreaks were reported from Darrang and Nowgong. The high mortality in Nowgong is attributed to contamination of the Kallang River, along the banks of which the bulk of the population is to be found. The Chief Commissioner intends to promote immediately the water supply of the Kallang River area, and to give a considerable grant this year and in future till the water supply of the Nowgong district is improved. The improvement of the water supply in a portion of the Darrang district has been taken in hand. In connexion with a cholera epidemic at Dhubri a scheme for the improvement of the water supply of the town by improving the existing wells, adding new ones and providing for the protection from contamination at a cost of a little over Rs.28,000, is now under consideration; the necessary funds have been placed by the Local Administration at the disposal of the municipality. Small-pox claimed a rather larger number of victims than in the immediately preceding years. The mortality from dysentery and diarrhoea showed no marked departure from the average of recent years, and the greatest incidence of these diseases occurred, as usual, amongst the population of the tea estates. A reference will be made to the Tea Association with a view to bringing the sanitary department into more direct relationship with the tea industry. The Chief Commissioner has taken steps for the appointment of a malarial research officer. At present malarial fever and kala-azar are very often confused. Under the orders of the Government of India, Captain Mackie, I.M.S., is now conducting researches into the etiology of kala-azar, and a provincial survey of the disease is being carried out by two assistant surgeons and fourteen sub-assistant surgeons under the supervision of the Deputy Sanitary Commissioner; on its completion it is hoped that it will be possible to formulate a plan of campaign. The most encouraging feature in connexion with this disease is the success which has attended the measures of control in the Golaghat subdivision. Towards the improvement of the rural water supply the local boards spent Rs.96,308. As a result of the conference on water supply and sanitation lately held at Shillong it has been decided, as an immediate measure, to allot 2 lakhs of rupees to local boards for expenditure on rural water supply during the current year 1913–14, and to require every board to prepare a comprehensive programme of the work of this nature which it can undertake to complete, with the financial assistance of the Government, within the five years commencing from 1914–15. The experiment of making grants to village committees for expenditure on rural sanitation has been successful, and the Chief Commissioner has decided to continue it on a larger scale.

Special Correspondence.

VIENNA.

Refusal of Foreign Scientists to accept Appointments at the University of Vienna.—Appearance of Cholera in Austria-Hungary.—Increase in the Number of Medical Students at the Austrian Universities.

THE events of the past year have at length forced the Senate of the University of Vienna to the unwelcome conclusion that the university no longer occupies the position it once held in the esteem of foreign scientists. This has been proved by the fact that the well known physiological chemist, Professor Abderhalden, refused the directorship of the Chemical Institute left vacant by the departure of Professor Ludwig, whilst the post of director of the Medical Clinic, formerly held by Professor von Noorden, has likewise been declined by Professor His of Berlin. These refusals, which were totally unexpected and caused very great surprise, are in themselves sufficient to prove that the university is to blame for this loss of prestige; whilst the resignation of two such eminent German scientists as Professor von Strümpell and von Noorden, both men in the prime of life, seems to point to the existence of some grave cause for dissatisfaction on the part of foreign professors. Needless to say, the matter has provoked much comment amongt the medical profession in Austria, which is beginning to express its disapproval of a régime that has had the lamentable effect of driving strangers away from Vienna, instead of attracting them to it. It is evident that some reformation of the existing conditions is needed, and it rests with the profession to see that this is properly carried out. In the meantime, temporary substitutes have been appointed to the vacant posts in the persons of Professor Nauthner to the Chemical Institute and Professor Salomon to von Noorden's clinic. Public opinion, at present, seems to be in favour of the reservation of these posts in future for Austrian scientists, and there should be no difficulty in obtaining properly qualified candidates, were it not that religion, race, and politics play as important a part in their selection as their scientific attainments.

The inevitable outcome of the war in the Balkans, as was foreseen from the beginning, has been an epidemic of cholera and other infectious diseases, several cases of which have already been notified in Bosnia and Hungary. Their appearance is no doubt due to the commercial relations existing between Austria-Hungary and the Balkan States, and also to the continual immigration into the borderland districts of the former country of large numbers of fugitives (principally Turks and Albanians) from the fighting provinces, most of which have a very low standard of health and personal cleanliness. All traffic from the infected districts, therefore, is now under the strictest supervision, and, thanks to the prompt action of the Board of Health, every precaution is taken to prevent a further spread of infection. Fortunately, the summer months have hitherto proved both wet and cold, and the danger of the dissemination of disease by flies has consequently been easily overcome.

In spite of the repeated warnings issued by the university authorities, the increase in the number of medical students at the Austrian universities still shows no sign of abating. Only a year ago the number of medical students working at the seven universities of Austria amounted to 5,021, of whom 257, including 10 women, graduated. During this last summer term the numbers have risen to 5,768; of that number 410 are women; the number of graduates reached 300, of whom 16 were women. A still further increase is predicted for the coming session.

Correspondence.

STANDARD MEAL FOR RADIOGRAPHIC EXAMINATION.

SIR,—In the Section of Electro-Therapeutics at the annual meeting of the British Medical Association recently held at Brighton, the following resolution was passed:

> That this meeting expresses the opinion that it is advisable that one definite type of standard meal for radiographic examination should be adopted by general consent, and asks the Electro-Therapeutic Section of the Royal Society of Medicine to appoint a committee to obtain evidence with a view of suggesting this official standard meal.

This resolution was formally handed to me as President of the Section referred to, and I have undertaken to give this matter my personal care and see that it is acted upon.

I therefore invite all radiologists and others who are interested in this subject, both here and abroad, to write to me stating as concisely as possible the composition, quantity, and consistency of the bismuth or barium meal they use as a general rule, and the reasons why they prefer such a meal.

The sooner this evidence is obtained, the better it will be for all concerned, and it will facilitate matters very considerably if the bulk of it is ready to lay before the

committee soon after it is appointed—probably during the month of October. As it is intended to give this question an international character, it is hoped that evidence will be given by radiologists in Europe, America, and elsewhere. Provided the communications are sent promptly, they will be in time to be fully considered along with the rest. Communications should be sent to me at 66, Harley Street, London, W.—I am, etc.,

REGINALD MORTON,
President, Section of Electro-Therapeutics, Royal Society of Medicine.

London, W., Sept. 24th.

THE RADICAL MASTOID OPERATION.

SIR,—According to your account of the proceedings of the Otological Section at Brighton, Dr. Milligan, in opening the discussion on the radical mastoid operation, drew attention to the importance of deciding whether an infected labyrinth be present or not, before committing oneself to any operative procedure. All aural surgeons must cordially acquiesce.

It is to be regretted, however, that such remarks are necessary in this country. One feels that the labyrinth has not received, and is not receiving, the attention due to its importance in aural surgery. Contrast the Vienna system. Before every operation of any magnitude on the middle ear, the patient is examined, both by a careful inquiry into the history, and by means of all applicable tests, for signs of old or recent labyrinthine mischief. This is done in every case as a pure matter of routine, and the results of such testing carefully recorded. An aural surgeon in Vienna would no more think of performing a radical mastoid operation without knowing the condition of the labyrinth beforehand than he would of operating without being sure as to the diseased side.

During the last fourteen months spent in the study of nose, throat, and ear surgery in Vienna, I neither saw nor heard of any case of post-operative meningitis following the radical mastoid operation due to the presence of a previously infected labyrinth. One fears, however, that such cases do occur in this country, due, I believe, to ignorance of the testing and recognition of labyrinthine disease. If Dr. Milligan's paper only succeeds in drawing attention to this one particular point, it will have done great good.—I am, etc.,

DAVID RANKEN, M.S.Lond., F.R.C.S.Eng.

Newcastle-on-Tyne, Sept. 20th.

THE CAUSE OF RHEUMATOID ARTHRITIS.

SIR,—My friend Dr. W. J. Midelton, in his communication on the above subject, closes his remarks with the statement that "the sending of enfeebled, pain-racked patients out of this country is often rank cruelty." I presume that Dr. Midelton must have some considerable exceptions to make in his mind to this statement, which, as it stands, might include patients sent to Egypt or Biskra, and, if so, it would have been well to express the same, as I feel sure Dr. Midelton, with his special knowledge of this subject, must be aware that a very large proportion of these "enfeebled, pain-racked patients" who have spent an entire winter in the driest resorts of Egypt do not return to England in this condition. I think I should be well within the mark if I state that three out of four subacute and acute rheumatoid arthritis cases are well on the way to recovery at the end of the first winter, and I ought also to state that most of the cases sent out to Egypt are cases in which almost every form of treatment has been tried previously in England. Many of these methods of treatment are, of course, quite useful in some cases, but every physician who has had experience of rheumatoid arthritis will, I think, agree that there are cases in which it is difficult to obtain any good results even on the most likely lines of modern treatment. In Egypt these cases have the climatic advantages to turn the scale, and the results can be demonstrated and are so noteworthy that it is much to be regretted that we have at present no means of enabling the poorer sufferers from these affections to obtain the results I have now seen for many years past obtained by those in more favoured circumstances.—I am, etc.,

LEIGH CANNEY.

London and Assouan, Egypt, September 22nd.

A VOLUNTARY SCHEME FOR SANATORIUM TREATMENT.

SIR,—As an example of the value of a voluntary scheme to secure sanatorium treatment, the figures of the south London district of the Foresters possess some interest. The scheme was adopted at the close of 1904 on the suggestion of the then secretary, Mr. A. Chapman, who has since been succeeded in office by his son.

This district, it appears, makes no charge for sanatorium treatment in its members' contributions. It is maintained out of interest earned on the investments. The rules of the society provide that the valuation of its assets and liabilities shall be at the rate of 4 per cent., whereas they earn 5 per cent.; all over 4 per cent. is used for various purposes and additional benefits, sanatorium treatment being one of them.

Mortality of Consumptive Members as Affected by Sanatorium Treatment.

Year	Total Deaths from All Causes.		Of which Numbers there were Deaths from Consumption.		Percentage who Died of Consumption per Annum.	Percentage who Died of Consumption Each Period.
	In Year.	In Period.	In Year.	In Period.		
1900	110		16		14.54	
1901	94		10		10.63	
1902	124	521	20	69	16.12	13.24
1903	90		11		12.22	
1904	103		12		11.65	
1905	89		10		11.23	
1906	110		11		10.00	
1907	91	509	6	38	6.59	7.46
1908	124		7		5.64	
1909	95		4		4.21	
1910	104		3		2.83	
1911	107	320	1	9	0.93	2.81
1912	109		5		4.58	

The table has been supplied by Mr. C. Chapman, the present secretary.—I am, etc.,

THOMAS D. LISTER.

London, W., Sept. 20th.

MEDICAL AID ASSOCIATIONS.

SIR,—There is, I have reason to know, a considerable body of medical men who desire to see some steps taken to meet the growth of medical aid associations and kindred institutions. I have not met with any sign that the local opposition manifested in various parts is being centrally directed or co-ordinated. Whether this is due to my blindness or not I cannot say, but, if it is as I imagine, surely we have here a serious defect in the activities of the Association.

I write this letter after having obtained a good deal of information from various parts, and in the hope that it may be read by some of those who have to deal with these institutions. If they, in turn, would offer suggestions and criticisms it might lead to some settled plan of action. As we are to have a Representative Meeting this autumn, at which I assume many details of policy could be discussed, it might be well if definite proposals came up from some Division. I do not chance to reside in a Division that is affected, and so cannot propose them myself, much less arouse interest in them amongst those who have no personal knowledge of the facts or of institutional competition of this sort. I claim, therefore, to speak without reference to any particular medical aid association.

I suggest that no action can be successful without (1) centralization of information, (2) co-ordination of local opposition, and (3) central opposition. These may be briefly elaborated.

To properly centralize information it would be essential to send an official to affected Divisions who would get into touch with the profession locally. He should compile from the information so procured a register of medical aid associations, and another of their officials. It is not illegal to keep a register, and one is kept at the head office of the whole of the profession, I believe. At the meeting of Secretaries at Brighton I asked the Medical Secretary whether this register contained any details of the careers of those who worked in open opposition to the profession. He gave me to understand—as indeed I anticipated—that

a register kept at a central office, and open to inspection by several persons, was a dangerous depository for information such as ought to be in possession of the profession. It might, therefore, be well that the register of medical aid practitioners should be kept in the private house of the official dealing with such matters. May I give an instance of what use might be made of such a register? A medical man who had been crossed off the rolls by the General Medical Council was recently found to be acting for an institution, and a case came into the courts, in which this was made plain. Now that same man was not so long ago appointed to a similar post in another part of the country. The local profession were made aware of his disqualification by a society with which I was then connected. He only stayed at that post for one day. This makes one think that the dissemination of such information with proper safeguards would be very useful. Many other matters would engage the attention of the British Medical Association official who did this work. Thus he would ascertain whether the staff of the local hospital would assist, and endeavour to consolidate the position of the local practitioners by drawing them into a local Public Medical Service. The latter is a practical method of opposing these institutions, and moreover, on the inclusion of women and children in State insurance schemes, will form a far better basis than that afforded by the medical aid associations. Local politics also vary a great deal. Some medical men seem actually to like these institutions, on the ground that they only procure the worst class of case; others are indifferent, and suppose that they will die a natural death. Again, where there are large club practices in the hands of the few, more difficulty is experienced in forming a plan of campaign than where all are equally affected by fluctuations in terms, etc. With the experience gained in this way the official would be able to take a wide view of the situation.

To co-ordinate local opposition the official would have to disseminate some of the information he gained—a successful attack in one place is at least an encouragement to others, but at present others do not get to know of it because it is no one's business to tell them. He should also have a plan to offer, and this must not be of the cut-and-dried order. It has been wisely pointed out that it is no use the Association laying down the terms which are to be accepted for various classes of work if the Divisions will not accept them. This is true, and therefore the Association had better cease doing so; but there is no sort of reason why it should not support the Divisions in claiming such terms as seem best or most attainable to them. He would also ascertain whether the medical officer employed constituted a weak point in the armour of the institution attacked. Very often this is the case, and the matter can be dealt with without libel actions or any undue excitement.

Central opposition would of course, take other forms. There are two facts about these institutions which severely handicap members of the Association in competition with them. In the first place, they employ agents to procure patients on commission, and in the second they do their own dispensing. The first is illegal, but it is done in various ways which make it very difficult to apply the law. The second is a great advantage over the practitioner who lives some miles from a chemist and whose patients in consequence have to make two journeys instead of one. Central opposition might concern itself with these matters; it might also seek to convince the General Medical Council that advertising is not being adequately dealt with by means of the recent notice.

Such, Sir, is a lightly filled in plan of campaign. I have not given reasons for thinking that these institutions are almost entirely undesirable. The South Wales situation should be known to all, and the recent incident at Chesterfield, where a medical aid institution obtained concessions from the Government by the threat of running a candidate against the Labour-Liberal nominee, is but an advance proof of what is in store for us if we do not get to work soon.

I cannot imagine that a great deal of money need be expended in this way, and even if that were the case the certainty that the subscription will be raised should prevent delay. These institutions are suffering from great difficulty in getting officers: this will not last for ever. It would be no hardship for the medical agencies to refuse help to them. Could not this form part of our campaign? But if we are going to delay until next spring we lose many valuable months, and may possibly be faced with a General Election in which united medical aid associations will be following the excellent example set them by Chesterfield. Are we to be unprepared to state our case at that time in the light of full information?—I am, etc.,

London, W., Sept. 9th. GORDON R. WARD.

*** Some of the information Dr. Ward suggests should be obtained is already in the hands of the Central Office, and the Association has long had an arrangement with the medical agencies in regard to medical aid associations such as is suggested in the last paragraph of Dr. Ward's letter.

MEETING OF SCHOOL MEDICAL OFFICERS.

SIR,—It is proposed to hold a meeting of assistant school medical officers and school medical officers at the offices of the Society of Medical Officers of Health, 1, Upper Montague Street, Russell Square, London, W.C., on Friday, October 10th, at 4 p.m., in order that some of the grievances of those actually engaged in the medical inspection of school children may be ventilated.

The present time is opportune on account of the matter of the grants from the Board of Education to local authorities in respect of money spent on medical inspection and treatment.

The meeting will consider the advisability or otherwise of suggesting the formation of a committee of the Society of Medical Officers of Health to inquire into the matter.

It is particularly desired that the meeting should be representative of all medical practitioners engaged practically in the work, irrespective of their being members of the Society of Medical Officers of Health.

If those intending to be present would kindly communicate with me, arrangements for the meeting would be facilitated.—I am, etc.,

C. W. HUTT, M.D.,
Senior School Doctor.

7, Gloucester Place, Brighton, Sept. 22nd.

REX v. HAMILTON.

SIR,—No doubt the majority of medical men have, like myself, followed this case in the papers from its initial stages to the time when the jury stopped it at the beginning of the evidence for the defendant, and noted how Dr. Hamilton was acquitted of the cruel charges brought against him.

Dr. Hamilton is personally unknown to me, yet I feel that we, who belong to his profession, should give him a helping hand to defray the huge expenses incurred in defending his good name.

Will some one in his district take this matter up, and give his medical well-wishers an opportunity to show their sympathy with him and his family in a practical way?—I am, etc.,

Lincoln, Sept. 22nd. S. R. DEANE.

Medico-Legal.

THE HISTORY OF AN UNQUALIFIED PRACTITIONER.

AT an inquest on a baby, held by the Croydon Coroner on August 25th, and in the proceedings which followed in the Croydon Police Court on September 5th, the following story was revealed, according to reports in the *Daily Telegraph*, the *Croydon Advertiser*, and other papers. The baby, whose death was attributed by the coroner's jury to convulsions, was attended by a "Dr." Sparling. The latter, on being informed subsequently that the child was *in extremis*, said he was unable to come to the house because he had a train to catch, and referred the parent to a medical man named Dr. Morrison Orr, who attended, and found the child was in fact dead. The child's father was already being attended by "Dr." Sparling, the medicine that he was taking being given him by "Dr." Sparling, and for the child he received a prescription which was made up by a chemist. "Dr." Sparling lived in a house bearing a brass plate with that name inscribed, and also a red lamp, on which was the word "Surgery," the hours of attendance, and a representation of a pair of spectacles.

This individual admitted at the coroner's inquest that he had treated the baby and the baby's father, and that he was not a qualified medical man, but he claimed to be an optician, and to be in partnership with the medical man whom he had caused

to be summoned. The facts mentioned about the house in which he lived were due to it having been occupied formerly by a fully qualified medical practitioner, who was in fact his partner. The partnership between himself and Dr. Orr was not in writing, but there was, he said, a verbal agreement that all profits should be shared equally. On a previous occasion a child whom he had attended under the supervision of his partner died, and this child's father had put in his shop window a notice warning people against him. He had acted as Dr. Orr's assistant, but not as his paid assistant, and had told the father of the child whose death was now under consideration that he did eye work principally.

Dr. Morrison Orr, who gave evidence at the inquest, said that on finding the child dead he reported the case to the coroner, and denied that there was now any partnership between himself and Sparling. The former relation was more a matter of friendship than of actual partnership. He had the use of the surgery for his practice, and Mr. Sparling was to dispense there under supervision and act as surgery attendant. The arrangement was with the object of enabling Mr. Sparling to make an effort to get a qualification. Perhaps Mr. Sparling saw a good many patients, but he never asked him to do so. He had had no personal or intimate connexion with Mr. Sparling since he put up the ophthalmic business two years ago. He thought that the prescription given for the child by Mr. Sparling was a suitable one, and on examining the child's body *post mortem* came to the conclusion that the cause of death was convulsions.

Subsequently the case came before the magistrates on a charge brought by the Medical Defence Union against Sparling for falsely implying that he was registered under the Medical Acts.

The defendant admitted the charge, and after the facts had been outlined by Mr. Hempson on behalf of the Union, the defendant's solicitor made an appeal for a light penalty by giving a long account of the defendant's career. This was to the effect that on leaving school he at first helped a medical officer of health in his laboratory and obtained ambulance certificates. He then went to sea as an officer's servant, but drifted into the ship's dispensary and made three or four voyages to Australia. Next he tried to get into the navy as a sick-berth attendant, but was refused on account of an impediment in his speech. He then went to New Zealand as dispenser and general assistant to a doctor, but returned to England in 1910, when he was between 22 and 23. It was at this time that the idea of entering into a partnership with a medical man was suggested to him. Throughout his ambition had been to become a qualified man, and he had attended the Polytechnic, taking subjects which would be necessary for him when he saw his way to beginning a regular medical career. There was no doubt that he had taken the prefix "Dr.," but he was led away by ambition, and every one must sympathize with a young fellow who was striving to walk up the ladder.

This plea was so far successful that despite the fact that Mr. Hempson, solicitor for the prosecution, had previously described the defendant's conduct as one of great impudence, constituting a danger to the public, and had asked for the imposition of the maximum penalty, the Bench, whilst characterizing it as a "very serious case," nevertheless contented itself with ordering the defendant to pay the modified fine of 5 guineas and £4 14s. 6d. costs.

Obituary.

THE LATE DR. BUSZARD.

A COLLEAGUE writes: Dr. Buszard was in his time one of the most distinguished students at Guy's Hospital, and it was probably only owing to the fact that he and Dr. Hilton Fagge entered in the same year that he did not get on the staff at Guy's, when Northampton would have lost his inestimable services. At their various London University examinations the two ran each other very closely, but Dr. Fagge's record was almost phenomenal. Thus, at the first M.B. examination Dr. Fagge took the exhibition and gold medals in three subjects and the gold medal in the fourth, whilst Dr. Buszard took third place in three subjects. At the second M.B. Dr. Fagge took three gold medals and was second in midwifery, whilst Dr. Buszard was placed third in surgery and was placed in honours in medicine, physiology, and midwifery. On this occasion, also, Mr. James Bankart, a great friend of Dr. Buszard, took the gold medal and scholarship in surgery, just beating Dr. Hilton Fagge, besides taking high places in the other subjects, so that practically in this year Guy's Hospital swept the board. After holding the post of house-surgeon at Guy's Hospital, Dr. Buszard was elected house-surgeon to the Northampton Infirmary, as it was then named, and, as he has recorded, it was no easy task to obtain this appointment in those days when every governor had a vote, and the whole county had to be canvassed; fortunately for the present generation the election is now vested in the Board of Management. He speedily obtained a reputation for good sound work and management, and in those days his bent was apparently towards surgery. At this time there was only one house-surgeon, but there were generally two or more pupils, and the zeal with which Dr. Buszard coached his pupils through the preliminary doctrines of anatomy, physiology, and materia medica, besides instructing them most carefully in the practical part of their profession, was most valuable to them when they entered on their London work. It is hardly necessary to say that he was almost worshipped by his pupils, who always found in him during their after-career a firm friend and valuable adviser in all their difficulties. He held the post of house-surgeon for seven years, which did much to endear him to his old patients, and at the same time built up for him a great local reputation. He then resigned and set up in practice in the town, but it was eight years before a vacancy occurred on the hospital staff, when on the resignation of Mr. Mash he was appointed honorary surgeon. Two years later, on the resignation of Dr. Francis, to the surprise of many people, he gave up surgery, and was appointed honorary physician. Dr. Francis had a very great local reputation, and at first people doubted whether a practitioner who was beginning to be noted for his surgery would succeed in the department of medicine, but the question was soon set at rest, and Dr. Buszard in the end was even more sought after than his predecessor has been. His fame locally was very great, and in his time he must have been called into consultation to almost every county family, whilst he always kept himself well abreast of all fresh ideas in diagnosis and treatment that came out. His professional brethren for years recognized him as their leader, and called him in for all cases of doubt or difficulty, and in him they found not only a wise consultant, but a firm friend, for he was always ready to help them with his advice in any of their troubles and perplexities. It was a great source of regret to them when last year, after fifty years' service at the hospital, he resigned his appointment and was made honorary physician, more especially as his resignation was greatly prompted by his physical infirmities, for at this time he had become very crippled by rheumatoid arthritis, and it was impossible for him to get about except with great difficulty and pain. He has not been long spared to his friends after his retirement, but the large number who followed his remains to the cemetery last week testify to the great respect and love which was universally felt for him, and it will be a difficult matter to supply his place.

THE death is announced of Dr. F. W. FORBES ROSS, who had been in bad health for some time, and had recently undergone an operation. He was born in Jamaica in 1867, the eldest son of Sir David Palmer Ross, afterwards Surgeon-General of British Guiana. He entered Dover College at the age of 13, and received his medical education at the University of Edinburgh and University College, London. He graduated M.B., C.M.Edin. in 1889, and M.D. in 1893, his thesis being on the bacteriology of infantile diarrhoea and its treatment. This subject continued to interest him, and his first publication was a volume on intestinal intoxication in infants, published in 1897, which was marked by much careful clinical and experimental work. In 1903 he became a Fellow of the Royal College of Surgeons of England, and devoted himself to operative surgery. He had acted as civil surgeon to the Guards' Hospital, London, and clinical assistant at the Samaritan Hospital. He subsequently became surgeon to the Kensington General Hospital, an appointment which he retained for some time, during which he recorded several cases in medical periodicals. Subsequently he occupied himself a good deal with literary work, and contributed to the public press. A friend in the course of an appreciation writes: His communications to the medical and other journals on professional subjects covered a very wide field, and included researches in tuberculosis, curvature of the spine in girls, and general and abdominal surgery, as well as the all-important subject of cancer, on which he published a valuable book in the last few months of his life. Other works of his were on the intestinal diseases of

infants, and a translation of Brück's book on diseases and treatment of the nose, mouth, throat and larynx. Besides these, his inventive genius showed itself in devising or improving various surgical instruments and appliances, including one for use in cases of abnormal delivery.

Public Health AND POOR LAW MEDICAL SERVICES.

BACTERIAL FOOD POISONING.

SUDDEN outbreaks of illness among comparatively healthy people are occasionally reported in which they have all partaken of made-up meat in the form of brawn, sausages, etc. They are usually referred to as cases of ptomaine poisoning; but, as Dr. Newsholme points out in the preface to a report[1] on the subject recently issued by the Local Government Board, it is more correct to describe them as cases of bacterial food poisoning, for it is now generally recognized that they result from the presence in the food materials consumed of certain pathogenic organisms, which are either living or capable of active multiplication, or which, although killed in the cooking, are nevertheless poisonous by means of the toxins contained in them. The report, which was entrusted to Dr. W. G. Savage, states very concisely the existing knowledge of the subject which has been obtained from outbreaks that have been investigated in this and other countries. After referring to the historical aspect of the question and to certain special forms of food poisoning, such as that from mussels, cheese, potatoes, or ice-cream, he deals with the clinical and general features of recorded outbreaks of bacterial poisoning, and then discusses the different bacteria concerned in the outbreaks. A special section is devoted to the Gaertner group of bacilli to which the majority of recorded outbreaks have been known to be due. In regard to those outbreaks in which these bacilli have gained access from sources outside the meat or food itself, Dr. Savage expresses the opinion that it is an extremely difficult matter accurately to trace their origin, and he discusses three distinct views which have been put forward. The first is that the Gaertner group bacilli, which are the cause of the food-poisoning outbreak, are of human origin, the meat being infected with pathogenic Gaertner bacilli from a human source—for example, a case of disease (paratyphoid fever) or a carrier case. While admitting the possibility of this view being correct, he points out that in this country, at any rate, there is no recorded case of food poisoning in which *B. paratyphosus* B has been proved to be the cause. He considers that the available data are strongly against the correctness of the second explanation, which is that the Gaertner group bacilli which set up the food-poisoning outbreaks are derived from ordinary faecal infection of the food. The view which he considers best explains all or most of the phenomena of food poisoning is that the outbreaks are due to infection of the food with virulent Gaertner group organisms (or other special bacilli) derived from animals which are either at the time suffering from disease due to Gaertner group bacilli or acting as carriers of these bacilli. In an addendum to the report is a list of seventy-nine British outbreaks of food poisoning which have been recorded since 1878, together with many details of them. A similar list of forty-four Continental outbreaks is given, and a very complete bibliography of the subject is appended.

[1] Reports to the Local Government Board on Public Health and Medical Subjects (New Series No. 77). Report to the Local Government Board on Bacterial Food Poisoning and Food Infections. By Dr. W. G. Savage. (Food Reports No. 1). London: Darling and Son. (Ed.)

Medical News.

THE Harveian oration before the Royal College of Physicians of London will be delivered by Dr. J. Mitchell Bruce at the College at 4 p.m. on Saturday, October 18th.

AT the Royal Dental Hospital on Tuesday, October 7th, the prizes awarded during the year to the students of the London School of Dental Surgery will be distributed by Prince Alexander of Teck.

AN examination for not less than twelve commissions in the Royal Army Medical Corps will be held on January 28th, 1914, and the presence of candidates will be required in London from January 26th. Applications to compete should be made to the Secretary, War Office, not later than January 19th, 1914.

THE ninety-first session of the Birkbeck College, Chancery Lane, will be opened on September 29th, when Sir Francis Darwin, F.R.S., will give the opening address. The college is conducted in relation with the University of London, and provides courses of study for degrees in faculties of arts, sciences, laws, and economics. Last year 42 students took degrees in arts or science, 18 with honours, and two gained university scholarships.

THE subject of the address to be delivered by Sir Charles Lukis, Director-General of the Indian Medical Service, at the opening of the winter session at the London (Royal Free Hospital) School of Medicine for Women, Hunter Street, Brunswick Square, on October 1st at 4 p.m., is the Medical Needs of India. Mrs. Garrett Anderson will be in the chair.

DR. B. L. BECKER, of New York, who we learn from the *Boston Medical and Surgical Journal* began life as a poor east-side boy and has risen to a position of distinction, has offered through the Board of Education of New York to provide 3,000 pairs of spectacles for school children with defective eyesight. The children are to be sent to his office with a proper order from principals, teachers, or visiting school nurses.

A COURSE of twelve lectures for teachers on biology and social problems has been arranged by the Eugenics Education Society, and will be given by Professor J. Arthur Thomson, of Aberdeen, and Mr. Major Greenwood, jun., Statistician to the Lister Institute of Preventive Medicine, on Friday evenings at 6.30, beginning on September 26th. Full particulars can be obtained on application to the secretary of the society, Kingsway House, Kingsway, W.C.

IN his address at the opening of the winter session at the medical school of Charing Cross Hospital on October 1st, Dr. William Hunter, in dealing with the subject of university medical education, will record certain conclusions derivable from the school's two years' experience of the plan of sending its junior students to pursue their preliminary studies at King's College. On the same occasion the prizes won by the students during the past year will be distributed by the Lady Wantage. At the school dinner at Gatti's Restaurant in the evening Mr. H. F. Waterhouse will take the chair.

A DINNER of past and present students of Guy's Hospital, at which evening dress will be optional, will take place in the Students' Club at 7.30 on October 1st. Various members of the staff are expected to attend, and the dean of the school, Dr. Cameron, will read his annual report. A further feature will be a distribution of certificates to students who won prizes during the past year. The prize distribution usually takes place during the summer session, but this year was deferred owing to the ceremony connected with the opening of the new school buildings by Mr. Arthur Balfour. Mr. Cosmo Bonsor, the treasurer of the hospital, will be in the chair.

RUMOURS appear to have gone the round of the Italian press to the effect that the Italian language was not recognized as an official language at the recent International Medical Congress, and, in fact, barely tolerated. As this is not the case Professor La Torre writes to the *Corriere della Sera* giving a correct statement of the facts. He shows that the fourth circular of the London congress reprinted in January, 1913, Art. II, declares that "the official languages are English, German, French, and Italian." This effectually disposes of the rumour that the Italian Government had asked some months before the Congress whether Italian was to be reckoned an official language and had received an ambiguous reply. There is nothing ambiguous about Art. II; moreover, this particular regulation had been printed and definitely approved as long ago as April, 1912, and again in August, 1912.

THE Brighton and Sussex Medico-Chirurgical Society commenced its work for the academic year 1913-14 at a meeting on September 4th, when Dr. Walter Broadbent, in a presidential address, discussed the remote effects of disorders of the stomach. Two conditions were specially prone to give rise to them. In one of these, though the stomach was in a state of spasm, it was nevertheless blown out owing to hyperacidity causing the pylorus to remain contracted. There was a tympanic percussion note, the resonance extending as high as the fifth rib and towards the axillary region. It was a dangerous condition in pneumonia and other fevers, and in ordinary cases might give rise to reflex and pressure disturbance either of the lungs or of the heart; asthma or stomach cough sometimes occurred, and at others palpitations, paroxysmal tachycardia, irregularity of the pulse, and even sudden death should the heart muscle be diseased. The second condition was one not of spasm, but of atonic dilatation, brought about by deficient acidity favouring fermentative processes. A splash could be obtained by succussion, and fluid heard to gurgle out of the stomach when the hips were raised on pillows above the level of the pylorus. This condition often led to mental depression or to insomnia, characterized by the patient waking between 2 and 3 a.m., and being unable to get to sleep again for a long time.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

TELEGRAPHIC ADDRESS.—The telegraphic address of the EDITOR of the BRITISH MEDICAL JOURNAL is *Aitiology, Westrand, London.* The telegraphic address of the BRITISH MEDICAL JOURNAL is *Articulate, Westrand, London.*

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2631, Gerrard, EDITOR, BRITISH MEDICAL JOURNAL.
2630, Gerrard, BRITISH MEDICAL ASSOCIATION.
2634, Gerrard, MEDICAL SECRETARY.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

CHOLELITHIASIS asks for information as to the treatment of a sinus continuing to discharge bile for six months after operation on an elderly patient; stones were removed from the common bile duct, and a probe passed through the ducts into the duodenum, gall bladder, and hepatic duct. The gall bladder was not removed, but a sixth part cut away, and a drainage tube inserted. The tube was removed about six days after the operation, and it appears to be this opening in the gall bladder which has not closed.

INCOME TAX.

H. B. C. has succeeded to a practice in which the receipts have recently been falling off, and has been informed by the income tax surveyor that duty will be accepted on the basis of the past year's receipts, but that "nothing further for the current year can be done."

*** The rule known as the 4th Rule of Cases I and II, Sch. D, provides that in such a case the assessment shall be computed on the average of the past three years' profits, notwithstanding the succession, but also provides for an adjustment if the successor's profits fall short of the assessed amount. "H. B. C." has no right to insist on an assessment for 1913-14 smaller in amount than the average of the practice profits for 1910, 1911, and 1912, but if at the end of his first year he should find that his profits have fallen below that figure he can claim an adjustment by way of repayment. Also, if he should find that this adjustment of the Sch. D. assessment affects the calculation of his total income to a sufficient extent to entitle him to a larger abatement than was originally allowed him, he may make a claim on that account at the same time.

ANSWERS.

PURCHASE OF MEDICAL PRACTICE.

BRANCH SECRETARY writes: In the interests of probable buyers permit me to question your statement (BRITISH MEDICAL JOURNAL, September 13th, p. 712): "In a large number of cases a two years' purchase would be a fair estimation." I think it would be too much.

SOLVENT FOR HARD WAX.

DR. S. DANZIGER (Manchester) recommends a 1 per cent. solution of solid caustic potash (KOH) in glycerine. It should be warmed (not too hot) and poured into the external auditory meatus. In twenty-four to thirty-six hours the ear should be syringed with warm water, and this should be repeated two or three times if necessary.

DR. C. E. HARRIS (Halifax) agrees with Mr. Macleod Yearsley in recommending a few drops of ether purus, but advises that the instillation should only last half a minute. He further says that care must be taken to see that the tympanum is entirely coated with wax, otherwise the contact of the ether with the drum will cause pain; the patient should only feel a tingling and bubbling sensation.

ECZEMA OF THE GLANS PENIS.

DR. H. OPPENHEIMER (London, N.W.) writes in reply to "Westmorland": I beg to say that I have found the following treatment very efficacious in cases analogous to his own. Let the patient wash the affected areas night and morning with a lotion containing half a drachm of ichthyol to the ounce of rectified spirits of wine, and then dust them freely with a powder of the following formula: Acid. boric; dermatol., āā gr. 3); zinci oxyd.; amyli, āā drs. 3ss. The strong alcoholic lotion may cause some burning sensation at first, but I find it far superior to any watery lotion or ointment.

DR. H. F. THORP (Ipswich) writes: The glans and prepuce must be kept scrupulously clean by daily ablution and bathed with a saturated solution of boric acid; internally ½ gr. of calomel once or twice a week, followed next morning with 2 or 3 drachms of sodium sulphate.

DR. LEONARD J. KIDD (London) writes that the study of a recent paper by Léopold-Lévi suggests that testicular extract might benefit the eczema and thyroid extract the attacks of gout. The extracts can be combined if desired. Soap and warm water must be used once a day, and six or seven times daily the patient should immerse the glans and retracted prepuce for two minutes in a sherry-glass filled with hot boric acid lotion (gr. v ad ʒj, not stronger), and then carefully dry with a soft handkerchief.

PROPHYLAXIS OF ACUTE NASAL CATARRH.

DR. GEORGE WILLETT (Keynsham, Bristol) recommends "Puzzled" (JOURNAL of September 20th) to try the effect of an autogenous vaccine, pushing the doses until some definite reaction is produced. In the acute attacks he recommends aspirin in 20-grain doses three times a day. In his personal experience this treatment has been perfectly magical.

RELIEVED writes: I would suggest the reduction as far as possible of all liquids in the patient's dietary and the application of pure glycerine to the nasal mucous membrane every night as a habit. The statement that the attacks come on about every six weeks irrespective of the weather conditions is, I think, fairly open to question unless "Puzzled" keeps a continuous accurate record of meteorological observations.

DR. WILLIAM WILSON (Manchester) writes: Granted there is no suspicion of intranasal lesion, I think these frequent "feverish colds" are simply local manifestations of a disturbed metabolism (probably to some extent the sudden absorption of thyroid internal secretion causing feverishness without corresponding rise of temperature; tachycardia; general venous stasis with fluid exudation in the nasal mucous tracts; nervousness and sweating). The following treatment has worked well in my hands: Small doses of calomel at night, a mild saline in the morning, just sufficient to remove the calomel without diarrhœa. A light, non-meat diet without alcohol and tobacco. The nose should not be syringed with antiseptics at any time, except when choked with secretion. During the acute feverish stage the morphine treatment gives rapid relief: Morphine gr. ⅛ to ¼ at night, with calomel gr. v.

LETTERS, NOTES, ETC.

THE USE AND ABUSE OF HYPNOTICS.

DR. WM. HARDMAN (Bispham, near Blackpool) writes: Such discussions as that upon hypnotics, so ably initiated by Dr. Willcox in the Section of Pharmacology and Therapeutics (p. 661), are deeply interesting to the vast majority of our members who are men engaged in the practical application of medical knowledge, and who live by it. Too much space is occupied by long wearisome details of experimental work the results of which are too often negative, and when positive the conclusions of any importance could be compressed into a short paragraph easily memorizable, whereas these long disquisitions are forgotten as soon as read, except by a few specialists in the same line as the writers. I wonder if Dr. Willcox's conclusions are the result of his own experiences on men or of experiments on animals. I noticed there was considerable want of unanimity amongst those who took part in the discussion. Dr. Willcox emphasized the depressing effect of chloral on the heart. This is a very old belief or myth, and I noticed one gentleman energetically controverted it and gave some experiments supporting his views. Whilst I would not attribute much importance to his experiments, my experience, obtained on very many others and on myself, has convinced me that chloral has no depressing action on the heart, and I have both given and taken large doses—as much as 40 grains. Similarly with regard to veronal. Dr. Willcox condemned it strongly, but Professor Bradbury said he had used it largely with excellent results, and that he had not met with the bad effects against which Dr. Willcox warned us. Similarly, Dr. Willcox said trional was like veronal in its effects, but worse. Now trional has been for very many years, perhaps, my most favoured hypnotic, and I must have prescribed it in dozens of cases, usually in a 7-grain dose, and I have always found it act admirably, nor have I ever seen any bad effects from it. One must not push too far conclusions derived from experiments on normal animals when one comes to the treatment of abnormal humans.

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